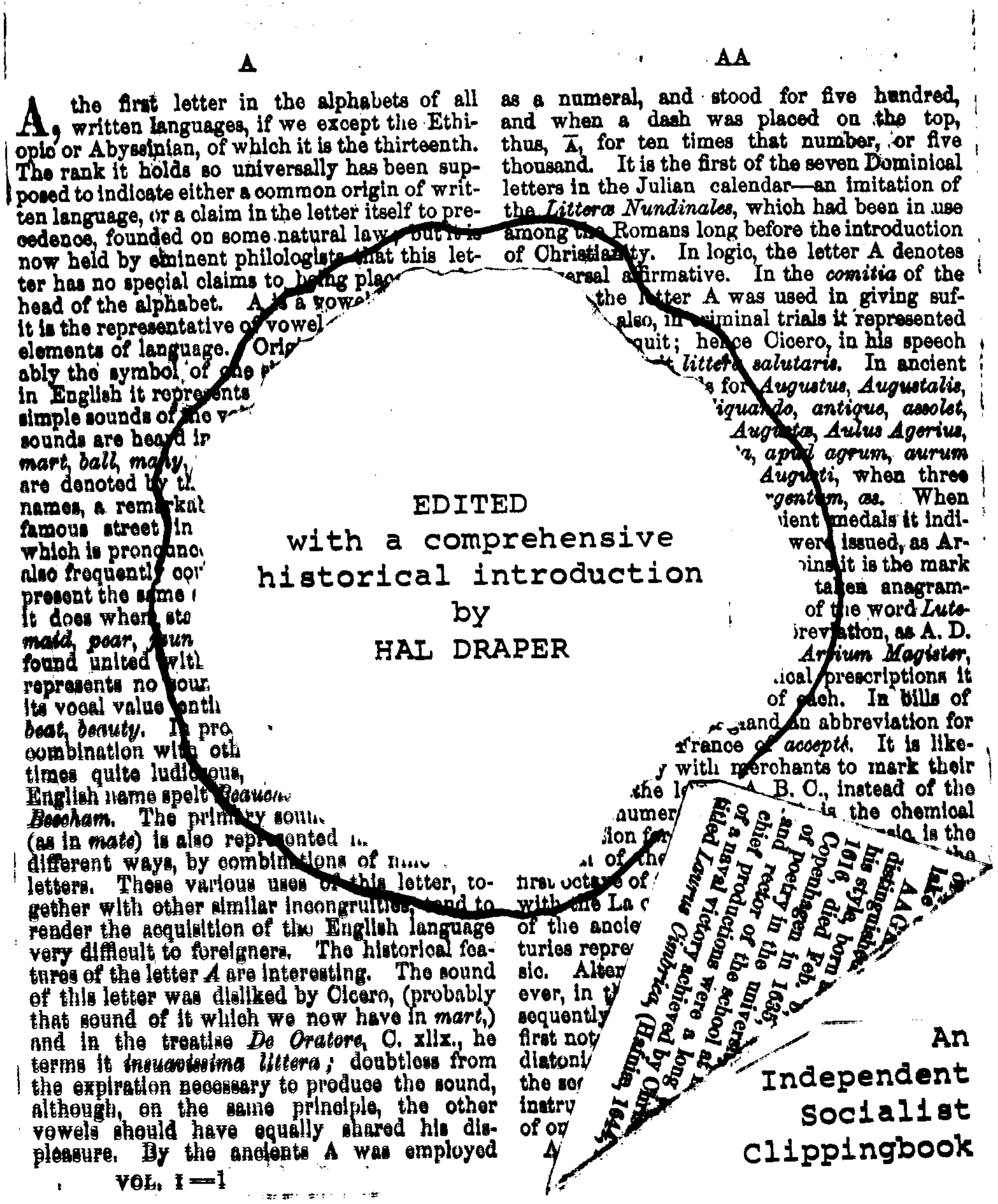
ganz1912

Karl Marx & Friedrich Engels

ARTICLES
IN THE
NEW AMERICAN CYCLOPÆDIA.



A AA

A, the first letter in the alphabets of all written languages, if we except the Ethiopic or Abyssinian, of which it is the thirteenth. The rank it holds so universally has been supposed to indicate either a common origin of written language, or a claim in the letter itself to precedence, founded on some natural law, but it is now held by eminent philologists that this letter has no special claims to being plac
head of the alphabet. A is a vowel
it is the representative of vowel
elements of language. Orig
ably the symbol of one
in English it represents
simple sounds of the v
sounds are heard in
mart, ball, many,
are denoted by th
names, a remarkab
famous street in
which is pronounc
also frequently cor
present the same
it does when sta
maid, pear, aun
found united with
represents no soun
its vocal value enth
beat, beauty. In pro
combination with oth
times quite ludicrous,
English name spelt *Beaucn*
Beecham. The primary soun
(as in *mate*) is also represented i
different ways, by combinations of
letters. These various uses of this letter, together with other similar incongruities, tend to render the acquisition of the English language very difficult to foreigners. The historical features of the letter *A* are interesting. The sound of this letter was disliked by Cicero, (probably that sound of it which we now have in *mart,*) and in the treatise *De Oratore,* C. xlix., he terms it *insuavissima littera;* doubtless from the expiration necessary to produce the sound, although, on the same principle, the other vowels should have equally shared his displeasure. By the ancients A was employed

as a numeral, and stood for five hundred, and when a dash was placed on the top, thus, Ā, for ten times that number, or five thousand. It is the first of the seven Dominical letters in the Julian calendar—an imitation of the *Litteræ Nundinales,* which had been in use among the Romans long before the introduction of Christianity. In logic, the letter A denotes
ersal affirmative. In the *comitia* of the
the letter A was used in giving suf-
also, in criminal trials it represented
quit; hence Cicero, in his speech
littera salutaris. In ancient
s for *Augustus, Augustalis,*
iquando, antique, assolet,
Augusta, Aulus Agerius,
a, apud agrum, aurum
Augusti, when three
gentum, as. When
ient medals it indi-
were issued, as Ar-
ins it is the mark
taken anagram-
of the word *Lute-*
breviation, as A. D.
Artium Magister,
ical prescriptions it
of each. In bills of
and an abbreviation for
rance of *accepté.* It is like-
with merchants to mark their
the l A. B. C., instead of the
numer is the chemical
ion f is the
of the
octave of
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VOL. I—1

lake
AAGA
distinguishe
his style, born
1616, died Feb.
Copenhagen in 1635,
of poetry in the univers
and rector of the school at
chief productions were a long
of a naval victory achieved by Ott
titled *Laurus Cimbrica* (Hafniæ, 164

EDITED
with a comprehensive
historical introduction
by
HAL DRAPER

An
Independent
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KARL MARX & FRIEDRICH ENGELS

Articles in the New American Cyclopaedia

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Introduction

The articles forming the bulk of this book were written by Karl Marx and Friedrich Engels for the *New American Cyclopaedia*, a 16-volume reference work conceived and edited by Charles A. Dana and George Ripley, published by D. Appleton and Company from 1858 to 1863, with several subsequent reprintings. The man responsible for getting them written was Dana.

1

Dana & the 'Tribune'

Charles Anderson Dana (1819-1897) was born at Hinsdale, N.H. At the age of 9, his mother dead and his father a failure at business, he went to live with an uncle in Vermont; then with another in Buffalo, working as a store clerk. Naturally intelligent and mainly self-educated through study and wide reading, he qualified for entrance into Harvard, where he lasted into the junior year, with very high grades, before dropping out for lack of money. He taught school for a year, but, having already become sympathetic to the ideas of the Transcendentalists as represented by Emerson and the Rev. George Ripley, he applied in July 1841 for admission to Brook Farm, the utopian communal colony which Ripley had been instrumental in founding. Here he was a tower of strength as a practical man and efficient worker, though T. W. Higginson was to say of him: "He was the best all-round man at Brook Farm, but was held not to be quite so zealous or unselfish for the faith as some others." At any rate, during five years here he met some of the most distinguished men of the day. In the middle of this course, the colonists, including Dana, were converted to Fourierism (called "Associationism") by Albert Brisbane, Charles Fourier's chief disciple in the U.S.; and the colony was converted into a "phalanstery" in accordance with the blueprints for that brand of utopia.

This was what Dana's early "socialism" consisted of. He was later to explain, rather apologetically but not inaccurately, how limited this "socialism" was:

"...the socialism of that day [I.e. Fourierism] contemplated merely a system of associated living, of combined households, with joint stock ownership of the joint property; every stockholder to get his share in the profits, which he had helped to earn, and the share earned by the capital ownership was most repugnant to the theorists we are speaking of. Individuality and liberty were their cherished objects, and all forms of communism they zealously repudiated. Nor did the socialism we are considering start from the uneducated or the poor. Its adherents were the people who had gathered in the fruit of the highest education, the fullest knowledge, the highest refinement that was known to American society in those times."

When Brook Farm foundered after the "phalanstery" burned down, Dana had already gotten some journalistic experience by editing with Ripley a magazine called the *Harbinger*, which lasted from 1845 to 1849, first printed at Brook Farm and then in New York; and he had also made the acquaintance of Horace Greeley, whose New York *Tribune* was sympathetic to Fourierism as well as to several other isms. In February 1847 Greeley took him on as city editor of the *Tribune*.

The New York *Tribune* was Greeley, and Greeley was the *Tribune*, in this era of "personal journalism." Without formal schooling but with an appealing personal style and great moral fervor, he had founded the paper on a shoestring and made it a national ideological power. Most references to it as the "most influential newspaper in the country" are a bit misleading. The New York *Daily Tribune*; founded in April 1841, was by no means the paper of largest circulation in the city. It was the *Weekly Tribune*, started in September of that year and compiled from material in the daily issues, which circulated all over the country and reached a record-breaking circulation of 200,000. Testimonials to its extraordinary impact on its large readership are easy to compile:

"The *Tribune* became a liberal power of the first magnitude." (Henry Steele Commager.) It had "a power never before or since known in this country." (James Ford Rhodes.) Greeley's "was the only journalistic voice heard from New York to California." (John Tebbel.) "The New York *Tribune* for a whole generation ... stood preëminent among the organs of opinion in the United States; it was one of the great leaders of the nation... Its weekly edition penetrated to the remotest hamlets of the West." (Allan Nevins.)

Greeley was quite radical for so influential a leader. He took up a variety of causes besides Fourierism; in general he was a social reformer, anxious to do good for the "Laboring Class." More basically he was oriented toward eliminating the *excesses* of the new and raw capitalist development of the country, in order the better to preserve what he conceived to be the fundamental values of the society. Most of the causes he advocated are no longer regarded as radical: advocacy of labor unionism; opposition to capital punishment; a homestead law for the settlement of the West; government aid to a Pacific railroad; liquor prohibition; more significantly for the time, opposition to slavery and to the Mexican War. And one other very important cause: the protective tariff. He was without doubt one of the most enlightened bourgeois reformers of the day.

Two years after he had become a regular European correspondent for the *Tribune*, Marx summed up the paper's political character, in a letter to Engels primarily discussing the latest book by the American economist Henry Carey:

> "The *Tribune* naturally is blowing the trumpet for Carey's book till it's blue in the face. Both, to be sure, have this in common: that in the form of Sismondian-philanthropic-socialistic anti-industrialism they represent the protectionist--i.e. industrial--bourgeoisie in America. This is also the secret why the *Tribune*, in spite of all its 'isms' and socialistic pretenses, can be the 'leading journal' in the United States." [14 June 1853.]

An evaluation of this sort, apparently paradoxical, was not easy to make at the time. Since then, it has been heard in retrospect:

> "He [Greeley] was eminently a 'safe' radical. When he devoutly fought for the American System, what did it matter if he allowed Albert Brisbane to pay him a hundred dollars a week for printing a column on Fourierism? Brisbane was ... a cheap price for a progressive reputation." *(Arthur Schlesinger Jr.)*

> "He believed in what he called 'beneficent capitalism.'... Actually, his idea was to direct the forces of capitalism so that industry, labor and agriculture

could complement each other in improving the common lot." *(Edwin Emery.)*

But for the Establishment of the day, the *Tribune* did indeed seem to represent a threateningly radical voice. At the time of a bloody riot in Astor Place when the militia shot down men and women, the high-circulation New York *Herald* had this to say about its competitor:

"The late fearful riot has opened up a new and alarming subject of investigation, and that is how far the anarchical socialism of the *Tribune* ... has operated in this community in unsettling the foundations of law and order and arraying the poor against the rich ... Do we really see the beginning of socialism in America?"

This was the paper on which the young Brook Farm graduate became the valued city editor, then managing editor (the first man in American journalism with that title, it is said). But in the spring of 1848, after the outbreak of revolution in Paris, Dana took a temporary leave from the job in order to cover the revolutionary events personally, sending home a series of articles. He wrote as follows in the first of these, once again illustrating his conception of socialism:

"It is no longer Fourierism or Communism, nor this nor that particular system which occupies the public mind of France, but it is the general idea of Social rights and Social Reorganization. Everyone is more or less a Socialist except the usurers and traders by nature, and even among them something of the light has penetrated ..."

But the immediate impact of the revolutionary events had a radicalizing effect on him. His reports began expressing a defense of the revolutionary violence of the people as having been imposed on them by "the resisting party in the bourgeoisie." He returned to America filled with new ideas, sympathetic with the ideas of Proudhon, and leaning toward the latter's nostrum of free credit for workers as the sovereign social remedy. He was capable of writing:

"Let others give aid and comfort to despots. Be it ours to stand for Liberty and Justice, nor fear to lock arms with those who are called hot-heads and demagogues, when the good cause requires it."

This revolutionary flush did not last long. His biographer J. H. Wilson gives the year 1855, six years after his trip to Europe, as marking the end of Dana's "illusions" regarding social reform. It was at this time that he wrote an editorial for the *Tribune* announcing the failure of the North American Phalanx in New Jersey, one of the main Fourierist colonies. The editorial came to this conclusion:

"Between associationism [Fourierism] and poverty there is a natural contradiction, and we suspect that the former can never be completely realized until the progress of science, invention, and industry has endowed society with an abundance of wealth of every kind, suhh as we now scarcely imagine."

This was the bridge over which he passed from utopian Fourierism to a very practical capitalism. Even at this time Dana was hostile to trade-union militancy and strikes (as was his mentor Proudhon, for that matter) but, during the rest of his life he moved further and further right. The *Dictionary of American Biography*, while labeling him a "liberal," goes on to relate that he

"opposed labor unions formed to conduct strikes, arguing that the workers' true remedy for unfair industrial conditions lay in cooperative industrial effort. His hostility to militant labor persisted throughout his life, and gave many of his utterances on industrial questions an illiberal and even reactionary tendency."

In time, Dana also became virulently imperialistic, and, in city politics, involved with "some of the worst figures in Tammany," taking a position against a number of important reforms. In this later period his chief claim to fame was his editorship of the New York *Sun*, one of the most successful examples of personal journalism. Its apotheosis of "human interest" stories and crime news was a transition to the "yellow journalism" (Dana's term) of Hearst and Pulitzer, who were going to overshadow him in the newspaper world. Toward the end, when the adroit W. M. Laffan, an intimate of some of the biggest millionaires of the time, became publisher of Dana's *Sun*, the paper (to quote Dana's biographer Rosebault) turned into the "outstanding champion" of the "Captains of Industry" of the age.

By 1896 Benjamin Tucker, the editor of *Liberty*, wrote that Dana "is today traducer in chief of all who stand for the people and are actuated by a desire for the people's welfare..." In that year Dana led the press in a violent denunciation of Bryan's presidential campaign, especially when Bryan came to New York to speak at Madison Square Garden at the height of the contest. Tucker thereupon issued a pamphlet reprint of the six articles which a much younger Dana had written for the *Tribune* expounding Proudhon's social philosophy, under the title *Proudhon and His "Bank of the People," Being a Defence of the Great French Anarchist... A Series of Newspaper Articles Written by Charles A. Dana*.

This episode brings us back to Dana's *Tribune* period, with which we are concerned as far as the *NAC* goes.

On the *Tribune*, the young and radical Dana was Greeley's right-hand man. When editor Greeley was off in the field, managing editor Dana even revised Greeley's own dispatches for the paper, with as iron a hand as he exercised on anyone else's copy. The tension between the two men was going to lead to a break after the beginning of the Civil War (primarily because Dana became a bitter-ender), eventuating in Dana's firing in 1862, but for over a decade there was a close association.

It was during this period that Dana signed up Marx as a European correspondent for the paper.

2

Marx, Engels & the 'NAC'

Dana had met Marx in Cologne during his visit to the European revolution. How they got together is cloudy: there are different versions in the biographies of Marx by Mehring, by Nicolaievsky and Maenchen-Helfen, and by Berlin, though the first two agree on pointing to Albert Brisbane as the link and 1848 as the year. (None of Dana's biographers mentions any association with Marx at all.) Dana was powerfully impressed by Marx personally:

> "I saw Karl Marx, the leader of the people's movement [in Cologne]. At that time his star was just in the ascendant. He was a man in the thirties with a squat powerful body, a fine face and thick black hair. His features indicated great energy and behind his moderation and reserve one could detect the passionate fire of a daring spirit." (Dana, quoted by Mehring.)

Nicolaievsky and Maenchen-Helfen write:

> "Dana paid Marx a visit, and spent a 'delightful' evening with him, as he was fond of recalling in later years, and took away with

him an abiding impression that in Marx he had met the most acute and far-seeing of the revolutionaries. In July, 1850, he wrote to Marx from New York that he always kept himself informed of Marx's activities and whereabouts and asked him whether he would not like to come to America. Marx's answer is unknown."

The *Tribune* was outstanding among American papers in employing regular foreign correspondents; in the early 1850s it employed eighteen. It was in August 1851 that Dana invited Marx, now living in London, to write for the paper. This arrangement provided a relatively regular, if small, stipend for Marx for many years--his only regular source of income other than Engels' financial support.

The articles which Marx contributed to the *Tribune* ranged over all of British and world politics, but one big ingredient was military affairs and events. This material was actually written or drafted by Engels, who had made a special study of military science since the days when he had fought in the army of the German revolution of 1848. As far as Dana or anyone else knew, all the articles were written by Marx, but in fact there was a division of labor between him and Engels. Since at first Marx did not write English well enough and was in any case absorbed in his economic researches, Engels started the work off with a ghostwritten series on the German revolution of 1848 (later republished, at first under Marx's name, as *Revolution and Counterrevolution in Germany in 1848*), of which the first article appeared in the *Tribune* on 25 October 1851 (dated September 1851). The first article written by Marx--in German, translated by Engels--was in the *Tribune* of 21 August 1852, dealing with current English electoral politics. The relationship continued, through various vicissitudes, into 1862, when Marx's last article in the paper was published in the March 10 issue.

Even after Dana's own political views had moved far from his '48 radicalism, his respect for Marx did not abate. There is an interesting vignette in James Parton's *Life of Horace Greeley* (Boston, 1854), in a chapter devoted to detailing a typical working day at the *Tribune* office:

> "Mr. Dana enters with a quick, decided step, goes straight to his desk... and is soon lost in the perusal of 'Karl Marx,' or 'An American Woman in Paris.'"

The quotation-marks (single in the original) around Marx's name are a bit puzzling, but since this was written while Marx's dispatches were still coming in, I presume Parton means that Dana is reading an article just received from Marx.

There is another interesting document that deserves insertion here, especially since it ends with a reference to Marx's work for the *NAC*. In 1860, when Marx was preparing to sue the *National-Zeitung* for publishing Karl Vogt's slanders against him, he gathered "testimonial" letters, of which a number were published toward the end of his *Herr Vogt*. The last of this group is by Dana, signing as "Managing Editor of the N. Y. *Tribune*," dated March 8, 1860, addressed to "Dr. Charles Marx"--of course written at Marx's request. In this letter Dana does two things simultaneously, quite cleverly: he gives Marx a shield against Vogt's slanders, by emphasizing Marx's patriotic anxiety for Germany's unity and independence, and in the same sentences he separates himself from Marx politically. The text of the letter is reproduced below from the Marx-Engels *Werke*, Vol. 14, p.679-680.

DANA"S "TESTIMONIAL" LETTER TO MARX

Tribune Office, New York, March 8th, 1860

My dear Sir,

In reply to your request I am very happy to state the facts of your connection with various publications in the United States concerning which I have had a personal knowledge. Nearly nine years ago I engaged you to write for the *New York Tribune*, and the engagement has been continued ever since. You have written for us constantly, without a single weeks' interruption, that I can remember; and you are not only one of the most highly valued, but one of the best paid contributors attached to the journal. The only fault I have had to find with you has been that you have occasionally exhibited too German a tone of feeling for an American newspaper. This has been the case with reference both to Russia and France. In questions relating to both, Czarism and Bonapartism, I have sometimes thought that you manifested too much interest and too great anxiety for the unity and independence of Germany. This was more striking perhaps in connection with the late Italian war than on any other occasion. In that I agreed perfectly with you: *sympathy with the Italian people*. I had as little confidence as you in the sincerity of the French Emperor, and believed as little as you that *Italian liberty* was to be expected from him; but I did not think that Germany had any such ground for alarm as you, in common with other patriotic Germans, thought she had.

I must add that in all your writings which have passed through my hands, you have always manifested the most cordial interest in the welfare and progress of the labouring classes; and that you have written much with direct reference to that end.

I have also at various times within the past five or six years been the medium through which contributions of yours have been furnished to *Putnam's Monthly*, a literary magazine of high character; and also to the *New American Cyclopaedia*, of which I am also an editor, and for which you have furnished some very important articles.

If any other explanations are needed I shall be happy to furnish them. Meanwhile I remain, yours very faithfully,

Charles A. Dana, Managing Editor of
the *N. Y. Tribune*

Dr. Charles Marx

This is not the place to retell the whole story of Marx's relations with Dana and the *Tribune**; but certain aspects form the backdrop for similar problems that arose with the articles for the *NAC*. Briefly these were four: (1) Dana often changed or partially rewrote articles arbitrarily--a practice not limited to Marx's. (2) He arbitrarily decided whether an article should be signed with Marx's name or appear as an editorial or unsigned leading article. (3) There was the constant question of the paper's low payment for foreign correspondence which its editors valued very highly. (4) At first, when the *Tribune* did not print an article submitted, it simply did not pay, and the time spent on the work was lost.

In the early part of 1857 Marx's relations with the *Tribune* were, in fact, at a low point. Among other things, many of Marx's articles were not being printed, therefore not paid for; and Marx was considering the possibilities of breaking with the paper and making other connections. It was at this time that he wrote bitterly to Engels:

> "It is truly disgusting that one is condemned to consider onseself lucky if such a rag takes you on. Making soup out of pounded and ground-up bones like a pauper in a workhouse, that's what political work is reduced to when one is wholly condemned to such an outfit." [23 January 1857.]

On 6 February, Marx wrote Dana that he would not be able to confine his articles to his paper, in effect threatening to take his correspondence elsewhere, though (as he told Engels) he did not say he was suspending work for the *Tribune*. Dana did not reply until the latter part of March. His propitiatory offer (Marx reported to Engels on 24 March) was couched in friendly terms but it amounted only to an agreement to pay Marx for at least one article per week whether the article was printed or not; a second article in the week would be paid for only if actually printed.

It was shortly after this crisis, and perhaps under its prod, that in a letter of 6 April Dana also invited Marx to collaborate on the New Yorker's new project, the *New American Cyclopaedia*.

The idea for the new encyclopedia may have come first from George Ripley, for it is recorded that Ripley had harbored such an ambition since youthful days. Ripley was Dana's friend and co-editor from the days of Brook Farm and the *Harbinger*. In 1849 he had joined Dana on the *Tribune* as its literary editor, and in 1856 established the first regular newspaper book-review department.

The Dana article in the *Dictionary of American Biography* relates that "A trip which Dana made with W. H. Appleton to the opening of the Chicago & Rock Island Railroad resulted in plans for an American Cyclopaedia in sixteen volumes..." though it is not clear what the railroad had to do with it. Otherwise Dana's biographers are remarkably unconcerned about this notable achievement.*

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*In general, see any of the major biographies of Marx except Isaiah Berlin's (whose section on this subject is replete with inaccuracies) or the collection *The American Journalism of Marx and Engels* (N.Y., New American Library, 1966), introduction by Charles Blitzer.

*Of four book-length biographies of Dana, most notice of the *NAC* is taken in J. H. Wilson's standard *Life of Charles A. Dana* (N.Y., Harper, 1907), though Wilson does not get the name right: he calls it the *American Cyclopaedia*. Candace Stone's *Dana and The Sun* (N.Y., Dodd, Mead, 1938) barely mentions its existence, without giving it any name. Charles J. Rosebault's

Although Dana devoted much time to the project, it was his co-editor George Ripley who ran the editorial and administrative side of the *NAC* operation and (according to the *D.A.B.*) did the bulk of the editing.

Apparently because of financial difficulties, the first run of Volume 1 was limited to only 1000, even though Dana wrote a friend before publication that 10,000 should have been the figure. It started selling well immediately.**

On 6 April 1858 Dana was writing that "The *Cyclopaedia* sells pretty well... Of volume 1 five thousand have gone ahead, and the tide rises still..." A combined sales figure of three million copies has been given for the two editions of the encyclopedia, i.e. including the second edition entitled the *American Cyclopaedia* launched in 1873. Robert Collison's comprehensive history *Encyclopedias* (2nd ed., N.Y., Hafner, 1966) describes the *NAC* as "a praiseworthy effort: well over three hundred contributors collaborated in its compilation, and it quickly gained authority in North America." Dana's biographer Wilson opines that it may be "regarded as the principal American work of its time."

As background for the restrictions which Dana imposed on Marx's contributions to the *NAC*, one should read the Preface to the first volume, which emphasizes these restrictions very strongly. Most of this Preface is given below.

As if this were not enough, the first printing of Volume 2 carried four extra pages which, besides listing some of the contributors, also reprinted two "blurbs" from reviews of the first volume, both of which stressed the style of writing. One, taken from the *American Church Monthly* of March 1858, was plainly inserted in order to bear witness to the complete objectivity and impartiality of the treatment: "plain, straightforward," "simple and severely chaste," etc.

It was entirely in line with this emphasis that Dana wrote Marx insisting that his articles "should show not the slightest party tendency regarding questions of politics, religion and philosophy," but must be unimpassioned, impartial and disinterested. Therefore also, Dana refused to permit Marx to write on sensitive subjects--that is, on any political, social or economic subjects, or even any philosophical ones--since he was well aware (as we have seen) of "the passionate fire" of revolution which animated the man whom he had recognized as "the most acute and far-seeing of the revolutionaries" in 1848. What then? Of the articles which Marx had been sending to the *Tribune* since 1851 under his own name, it was the analyses of military matters (actually written by Engels) which had most impressed the editors by their expertise. Military science and military history were relatively "safe" subjects. It was in this field, therefore, that Dana invited Marx to contribute.

Marx and Engels were, then, on warning to exclude all partisanship from their style. And it is certainly true that the tone of their *NAC* articles is relatively bland and objective--for them. Still it is clear that value-judgments crept in more frequently than the editors desired. The extent to which this is true may be gauged by examining

---

When Dana Was The Sun (N.Y., McBride, 1931) has a half-sentence about it which manages to make three errors; he too does not know its name. A. H. Fenton's semi-fictionalized biography *Dana of The Sun* (N.Y., Farrar & Rinehart, 1941) does not mention the encyclopedia at all.

**The date on the title-page of Volume 1 is 1858, but the copyright date is 1857. In Volume 2 (first printing only) the statement is made that "The First Volume of this work was published on the last of December [1857]..." The Preface to Volume 1 is dated December 1, 1857.

PREFACE TO THE

NEW AMERICAN CYCLOPAEDIA

(Excerpts)

It is the design of the *New American Cyclopaedia* to furnish a condensed exhibition of the present state of human knowledge on the most important subjects of inquiry. The discussion of the controverted points of science, philosophy, religion, or politics, does not enter within the compass of its plan; but it aims exclusively at an accurate and impartial account of the development of opinion in the exercise of thought...

In preparing the materials of the work, neither the Editors nor their collaborators have attempted or desired to make it a vehicle for the expression of personal notions. As far as was consistent with the nature of the case, they have confined themselves to the historical relation of facts, without assuming the functions of advocates or judges. In instances which seemed to demand a positive verdict, they have endeavored to present an illustration of evidence rather than an exhibition of argument. At the same time each subject has been treated in the point of view of those with whom it is a speciality, and not in that of indifferent or hostile observers. In order to secure the most complete justice, in this respect, the various articles in the work have been intrusted, as far as possible, to writers whose studies, position, opinions, and tastes, were a guarantee of their thorough information, and which furnished a presumption of their fairness and impartiality. Thus, in the different branches of science, the articles have been prepared by men of eminent accomplishments in each of the respective departments; the articles on History, by historical students in special provinces; on Biography, especially of living persons, by those most familiar with the life and character of the subjects; on Military and Naval affairs, by military and naval men; ...

In the preparation of this volume nearly a hundred writers have taken part, including persons in almost every quarter of the United States, in Great Britain, and on the Continent of Europe. No restriction has been laid on their pens, except that of abstinence from the expression of private dogmatic judgments, and from the introduction of sectarian comments at war with the professed historical character of the work. ... In this fact, it is hoped, will be found a guarantee of the universality and impartiality of the work, impressing upon it a disinterested character, no less by the necessity of the case than by the good faith of individual professions.

what happened to many of these articles when rewrite jobs were performed on them for the "second edition" entitled the *American Cyclopaedia* (see Section 6 below, notes on Appendix IV) and there observing the predictable blue-penciling of certain phrases. A good example is the article "Bernadotte," which is notably blander in the rewrite; in "Algeria" many of the attacks on French colonial atrocities are reduced and toned down; for the case of "Bolivar," see the notes on that article in Section 5.

Because the *Tribune* articles covered more varied fields, Engels' contributions played a minor role; but since the *NAC* material was so heavily slanted toward the military, it fell to Engels to do the bulk of the work. Of the 67 articles (see Appendix V, Table 1), only eight are ascribed to Marx alone, of which two ("Bernadotte" and "Bolivar") are medium-long, the rest short. Eight more are ascribed to Marx and Engels jointly, all of them short except "Blücher." This leaves 51 ascribed to Engels alone, including the very longest articles of all, like "Army," "Cavalry," "Infantry," and "Navy." Of course, these ascriptions by the *MEW* editors involve estimates of the relative amount of work done on each article by the two men; for even where an article is assigned wholly to one or the other, there was a certain amount of joint work. Generally speaking, Marx did the general-biographical research, and also acted as Engels' research assistant in the British Museum, since Engels was doing his work in Manchester.

Engels undertook the burden of the work willingly, as usual, particularly because Marx and his family were going through a period of disheartening financial and personal troubles, while, through it all, Marx was trying to complete the economic studies which eventuated in 1859 in the publication of his *Critique of Political Economy*. With the outbreak of economic crisis in 1857 Engels found another motivation, intimated in his letter to Marx of 15 November. After explaining how glad he is that the crisis is bound to bring revolutionary prospects and break up the debilitating atmosphere of apathy and dullness, he writes: "My military studies, therefore, immediately take on more practical significance; I am throwing myself without delay into the subject of the existing organization and basic tactics of the Prussian, Austrian, Bavarian and French armies..."

The letter reflects Engels' characteristic "bounce," but he was already suffering from serious illness. In the summer of 1857 he had developed glandular trouble, which continued to dog him during much of the period when he was working on *NAC* articles. Many delays in the delivery of articles, as we shall see, were due to the fact that he was persuaded to spend a good deal of time at the seashore in order to recover his health enough to go on with the work.

The *NAC* articles were, then, written under rather difficult circumstances in general, and increasingly with the feeling that it was a matter of turning out ill-paid potboilers. Engels was indeed later to refer to them as "mere pot-boilers, nothing more; they can peacefully remain buried." (Letter to Hermann Schlüter, 29 January 1891, *MEW*, Vol.38, p.16.) But, as Mehring comments in *Karl Marx*, this was an exaggeration. It was indubitably true of a number of the short and inconsequential articles on military terms and the like; but a number of the longer military-historical surveys and biographical pieces embodied a good deal of conscientious research, and are still of considerable interest from the standpoint of the development of Marx and Engels' ideas. Indeed, in his letter of 14 February 1858 (see below) Engels expressed a certain pride in the quality of the articles being sent to Dana: "in very many cases, independent works instead of the lousy compilations which he otherwise gets."

Engels would have been cheered if he ever saw (and we do not know if he ever did see) the first printing of Volume 5, which contained a supplementary section with six pages of "opinions of the Press." There are excerpts from 22 publications praising the *NAC*, often referring to specific articles, almost always in the humanities. But two articles by Engels come in for mention. A blurb from the Boston *Pilot* says, reviewing Volume 4:

"The article on 'Cavalry' we are tempted to pronounce the best thing in the volume--it is full of interesting details, and is written in a simple and unscientific style, which is exactly suited to a popular cyclopaedia."

And an excerpt from the Boston *Post* emphasizes the up-to-dateness of the treatment:

"...here many recent events are chronicled and condensed with great fidelity--as, for instance, the incidents of the Crimean War (Alma)..."

A decade later, when he had to outline his own literary biography on two occasions, Marx did not omit the *NAC*. In a letter to his friend Kugelmann of 30 January 1868 Marx enclosed such an outline for the benefit of a writer named Kertbény. One of the items was:

"1851-1860: regular contributor on the English-American *Tribune* (New York). Contributions to *Putnam's Review* (New York) and the new *'Cyclopaedia Americana'* (New York)."*

On 7 October of the same year, writing to N. F. Danielson, Marx wrote in a similar list:

"1851-1861: Continuous contributions in the English language to the New York *Tribune*, *Putnam's Review*, and *New American Cyclopaedia*."

There was an earlier occasion, also, when Marx cited his connection with the cyclopaedia as part of his biographical record. This was in a long letter to Weber, his attorney in the suit against the Berlin *National-Zeitung*, under date 24 February 1860, i.e. before the termination of his work on the *NAC*.

The *NAC* articles have long remained unfamiliar even to students of Marx's writings. The first Russian and German translations of the whole body of articles, in the respective Collected Works editions, will be discussed in a later section, but we may mention now that the first time any of the articles ever appeared in German translation was as late as 1956 (the article "Army" in the Engels collection *Die Armee*). The first Russian edition of the Marx-Engels *Sochineniia*, presenting a partial and inaccurate collection in 1934, was the source for the first and only time any of these articles have been reprinted in their original English--in the Marx-Engels collection *Revolution in Spain* (N.Y., International Publishers, 1939; Marxist Library, Vol. 12). This volume included three articles, of which one, "Badajoz," was rejected from the Marx-Engels canon in the second Russian edition. The other two were "Bidassoa" (which was given the Spanish spelling with one "s") and "Bolivar."

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*An inaccurate version of this passage is included in Marx's *Letters to Dr. Kugelmann* (N.Y., 1934), p. 62. Marx's statement is itself inaccurate, even if his own contributions are assimilated with Engels': the dates should be 1851-1862; the *Tribune* can hardly be called English-American; the name of the second periodical was *Putnam's Monthly Magazine* (later changed to *Putnam's Magazine*); and of course in listing the cyclopaedia Marx has its name mixed up with the rival *Encyclopaedia Americana*.

3

The Canon of M-E Articles

The determination of which articles in the *NAC* were written by Marx and/or Engels has long been in a confused state. Of the few references to be found in biographies or other books on this question, most are inaccurate, including some of recent publication.

The first authoritative assemblage of these articles was made in the second edition of the Marx-Engels *Sochineniia* [Works], Vol. 14, published in Moscow in 1959 under the editorial supervision of the Institute of Marxism-Leninism. This edition presented 67 articles as the definitive canon--a considerable change from the first edition put out by the Institute. The first edition (in Vol. 11, Part 2, Moscow, 1934) had been the very first attempt of any kind to collect the articles between a pair of book covers. It included 28 articles, but three of these were later eliminated from the canon and denied admission to the second edition. These three were: "Augereau," "Austerlitz," and "Badajoz." (See Appendix III.)

The Marx-Engels *Werke*, Vol. 14 (E. Berlin, Dietz, 1961), issued by the Institut für Marxismus-Leninismus beim ZK der SED--the Institute of Marxism-Leninism attached to the Central Committee of the East German Communist Party--was explicitly based on the second Russian edition. The main foreword is by the Russian institute, followed by a short supplement signed by the German. The canon presented is the same 67 articles.

References in this book are usually to the German *MEW*--Vol. 14 for the articles themselves, Vol. 29-30 for the Marx-Engels correspondence about them, along with accompanying annotations and introductory material.

The following remarks on the canon are based on four sources:

(1) The above-mentioned editorial material in *MEW*, Vol. 14, 29-30, particularly the forewords and notes.

(2) An article published in *Voprosy Istorii K.P.S.S.* [hereafter abbreviated *V.I.KPSS*], 1958, No. 4, by E. Staroselskaia, A. Dergunova, and E. Udaltsov, entitled "An Unscientific Approach to the Study of the Legacy Left by the Founders of Marxism," pp. 184-85, 190, 192-93, criticizing recent Western bibliographical material on Marx and Engels.

(3) The Marx-Engels correspondence itself, as contained in *MEW*, Vol. 29-30. As we shall see, it is not fully taken into account by the editors of *MEW*.

(4) Lists of contributors to the *NAC* which appeared in Volumes 2, 5 and 16 of the encyclopedia itself, *but in the first printing only*. Marx's name is not included in the Vol. 2 list. The list in Vol. 5 includes this:

> "Charles Marx, P.D. [*sic*], London, Eng.
> *Army, Artillery, Bernadotte, Bolivar, Cavalry, &c.*"

The list in Volume 16, covering the whole set, is a little longer:

> "Charles Marx, Ph.D., London, Eng.
> *Army, Artillery, Bernadotte, Bolivar, Cavalry, Fortification, Infantry, Navy, &c.*"

Of course, another use of these lists is to prove that certain articles were *not* sent in by Marx.

While these are the four sources that have been accessible to me, the editorial material in *MEW* is, in turn, based on additional sources which are indispensable for a determination of the authorship of many of the articles. These include:

(1) Letters by Charles Dana to Marx.

(2) Marx's private notebooks, in which he entered articles sent to New York.

(3) Papers left by Marx and Engels including outlines and excerpts

for articles, etc.

(4) Records of D. Appleton and Co., publishers of the *NAC*.

Earlier references to the articles had mostly been based on passages in the Marx-Engels correspondence. This is an unreliable approach by itself, since the letters refer to contemplated articles which were never in fact written, and to articles which may have been submitted by Marx but which were not printed, or printed only with considerable revision or in drastically shortened form, in either case changed to the point of unrecognizability. Also, there is more than one case where the same article is referred to in the correspondence under two or more names and has been taken to be different articles.

These facts probably account for the widespread inaccuracies in otherwise knowledgeable books. Mehring's *Karl Marx* (Ann Arbor, 1962) p. 254, says, for example, that "it would appear in fact that the regular co-operation of the two friends in the preparation of the encyclopedia never got beyond the letter C." Chaloner and Henderson's introduction to their collection *Engels As Military Critic* (Manchester, 1959) mentions the names of nine articles as by Engels: of these, two ("Cannon" and "Aboukir") are by neither Marx nor Engels; one of the remaining seven is by Marx, and two others by Marx-Engels in collaboration. Yelena Stepanova's *Frederick Engels* (Moscow, 1958; trans. by J. Gibbons) surprisingly says that "the two friends wrote about eighty articles on military topics"--an overestimation even if one counts articles written but not printed, and in any case they were not all on military topics. The *NAC* is not mentioned at all in the biographies by Nicolaievsky and Maenchen-Helfen, Isaiah Berlin, or Riazanov.

Particularly disappointing is the vague treatment of these articles in Gustav Mayer's otherwise comprehensive *Friedrich Engels, Eine Biographie* (2 vols., The Hague, Nijhoff, 1934). Since the name of the encyclopedia was, curiously enough, never mentioned in any of the letters which Marx and Engels wrote to each other in the course of the work, Mayer apparently did notknow what the name was; it is certainly not given in the book. The only specific articles mentioned are "Army" and "Blücher," references to which are in the correspondence. It is likely that he never looked up the articles themselves. He writes:

> "But we are spared the need to consider these articles here; Engels himself labeled them compilations and declared that a subsequent disinterment [of them] was unnecessary. They would be worth while considering only in a separate publication of his military writings." [Vol. 2, p.66.]

It would seem that Mayer has made an error here; as we have seen, Engels reference to "compilations" is just the reverse of what Mayer says.

Two of the most recent books, published some years after the full availability of the facts, are the worst in this respect. The introduction by Charles Blitzer to *The American Journalism of Marx and Engels* (New American Library, 1966), while providing a good summary of the *Tribune* connection, has an error-filled passage on the cyclopaedia articles. It is less surprising to find that Grace Carlton's very unreliable biography *Friedrich Engels, The Shadow Prophet* (London, 1965) says, "[Engels] contributed one article at least--on 'Army.'"

In 1956 Maximilien Rubel's great *Bibliographie des Oeuvres de Karl Marx* (Paris, Rivière) included a list of the cyclopaedia articles written by Marx and by Marx-Engels, as well as a few by Engels alone, mentioning as sources the Marx-Engelse correspondence, E. Drahn's *Marx-Bibliographie*, and *Karl Marx, Chronik seines Leben* (Moscow, 1934), but his 1960 *Supplément* to this remarkable work noted the information in the first edition of the Russian

Sochineniia (which was itself very inaccurate, we now know) and in the *V.I.KPSS* article (which in fact was largely a critique of Rubel). In sum, on this point the Rubel bibliography stands in need of complete revision.

A number of the articles that have, at one time or another, been ascribed to Marx or Engels were, we know now, by other writers.

In Engels' letter of 22 April 1857 giving his first reaction to the encyclopedia project (see Section 4 below), his enthusiastic response mentioned several article subjects that we do not hear about again in the letters: *Alexander, Aristotle, Austerlitz, Caesar, Carnot, Chartism, Code Napoléon, Columm, Communism, Epicurus, Socialism*--besides his enumeration of whole branches of knowledge. A translation of the article "Chartism" was in fact published under Marx's name in the Bernsteinian *Sozialistische Monatshefte* for 16 November 1916; but it was written by William Humphreys (according to the list of contributors in Volume 5, first printing), who was also the author of "Abd el Kader." The article on Epicurus was written by the liberal German-American journalist Hermann Raster, editor of the New York *Abend-Zeitung*, who also wrote a number of other articles for the encyclopedia. "Hegel" was written by Henry Smith; "Socialism" by Parke Godwin, one of Dana's Fourierist friends.

The article "Cannon" has been ascribed to Marx or Engels very persistently, because the Marx-Engelse correspondence does repeatedly refer to an article of this title which Engels was working on. However, this is actually the article "Artillery." It was mailed to Dana under the heading "Cannon" because Marx thought it was too late to get into the "A" volume, but as a matter of fact the first volume of the cyclopaedia ended with "Araguay." It therefore became possible for Dana to publish the article under the heading "Artillery," and he did so. In a later volume the *NAC* also published an article on "Cannon," but this was not by Marx or Engels. *V.I.KPSS* refers in proof to Dana's letter of 8 January 1858, in which he informs Marx that the article on Cannon would be published under the title "Artillery." The same article is also referred to as "History of Arms," but the article "Arms" which appeared in the *NAC* was written by Henry W. Herbert (according to the list in Volume 5, first printing).

The title "Castrum," which occurs in some Marx-Engels letters, simply refers to the article "Camp." There is no article headed "Castrum" in the cyclopaedia.

Other article subjects came up for discussion in the correspondence. In his letter of 23 April 1857 Marx expressed a preference for subjects like "Ricardo, Sismondi, etc." In an exchange of letters (Marx on 23 May 1857 and Engels on 28 May) they discussed the idea of writing an article on "Aesthetics" but rejected it. Another article title came up much later when Dana requested one on Bengal ("History of the Bengal Rebellion" in Marx's letter of 23 January 1858, and just "Bengal Rebellion" in Engels' of 25 January). Engels advised declining the commission since it would take too much time but suggested it might be written later under the heading "Hindustan Rebellion." Nothing came of it.

Other article titles that came up are considered in Section 6 below, in connection with Appendices I to III.

In addition to the 67 articles which were published in the *NAC*, Marx sent at least five more to New York, making 72 in all at a minimum. For some reason, only two of these are singled out for special mention in *MEW*, Vol. 14, note 1:

> "Altogether, 67 articles by Marx and Engels appeared; two smaller pieces--'Abensberg' and 'Cartouch'--were apparently severely shortened by the editors of the encyclopedia, who often performed

operations on the text when publishing the contributions. Both of these articles were excluded from the text of the present volume; they are contained in the appropriate notes..."
And in fact the brief texts of these two articles are translated into German in other notes. The same is not done, however, for the article "Bülow," which is more or less in the same case. (For the five articles written but not published, see below Section 6, Appendix I.)

When *V.I.KPSS* states that "Marx sent to the editor not less than 70 articles," the authors probably have in mind the 67 articles of the canon plus "Abensberg," "Bülow," and "Cartouch."

It should be borne in mind that even as far as the 67 published articles are concerned, we have no certain way of knowing to what extent the *NAC* editors made changes, additions or excisions. We know that in his letter of 11 March 1858 Engels expressed the suspicion that Dana had "considerably shortened our articles," but this was simply because of the discrepancies between Marx's estimate of the payments and the actual payments; they had not yet seen the first volume as published, and there is no follow-up on this in the correspondence. We know there was a regular problem of this sort with the *Tribune* articles; and it is reasonable to make the guess that, for the cyclopaedia, Dana or Ripley may have softened expressions or judgments here and there in the articles sent in by Marx. In some cases *MEW* definitely indicates parts of the published articles that were added in New York; these are discussed in the notes on the text wherever necessary, and the added sections have been eliminated from this book.

Finally, this is as good a place as any to mention that, out of 16 biographical articles in the 67, there are three cases where the *names* of the subjects are wrongly given in the cyclopaedia. These are: Bennigsen, Bolivar, Bosquet. (For details, see the notes in each case in Section 5.) In none of these cases do the *MEW* editors take notice of the error, surprisingly enough.

4

From The Marx-Engels Correspondence

In the published correspondence between Marx and Engels (*MEW*, Vol. 29-30), we can follow the highlights of their relations with Dana and the cyclopaedia office. (See Appendix V, Table 2 for a list of the relevant letters.)

The first reaction to Dana's invitation to participate in the project is Marx's letter to Engels of 21 April 1857, enclosing Dana's letter and asking: "Be so good as to write *by return mail* what I should answer to the enclosed letter by Dana. I must send the answer by the Friday mail."

Engels' reply of 22 April is exuberant: he leaps immediately to a grandiose project for doing the whole encyclopedia themselves together with a consortium of their friends:

> "The business about the encyclopedia reaches me at just the right moment, and probably likewise for you. *Voilà enfin* the prospect of being able to fill the holes in your budget, and for me the expectation of regularly occupying my evenings. 'Peace was demoralizing me': since I had no more articles to write for the *Tribune*, I have led a bohemian life to too great an extent, the opportunities being numerous here. As far as the military articles are concerned, Dana should immediately answer the following questions:
>
> "1. How many volumes will the whole thing have, and how far does he intend to go in the first volume, or in the first and second?

"2. Should the military articles limit themselves mainly to the explanation of technical terms, such as for example: Artillery, Setting up camp, Column; with historical marginal glosses and a concise resumè of the various branches of military science, as for example:- Artillery: (1) explanation; (2) history and present state; (3) resumè of the branches of the modern science of artillery (shooting, serving the guns, harnessing, use in the field and against fortresses, etc.)

"3. Or will there also be articles on military history?--for example, under the heads of Austerlitz, Arbela, etc., short accounts of the battles themselves, and, under Alexander, Caesar, Carnot, etc., military biographies together with an indication of each person's epoch-making advances in progress.

"So write *immediately* to Steffen to get from him the title or author of an encyclopedia of military science which is as complete and as short as possible; one which has the most articles but the shortest would be best, for it will serve to inform me at once which articles I have to do, and give me the alphabetical order as fully and conveniently as possible. As soon as I have this, I can get to work on the letters A and B; perhaps even sooner, since I can spot many articles in Brockhaus alone, and some even without it.

"The pay will be good enough even at $2 per large page; much of the stuff is just transcribing or translating, and the bigger articles will not be very much work. I am immediately going to look at a couple of English encyclopedias to see *which* articles they have, but after all Brockhaus in particular, which still remains the best starting-point, is more complete, and also it seems to serve Dana as his model.

"It would not hurt if some philological pieces could be picked up, for example, the Germanic languages, Middle High German or Old High German etc. literature (the same in the Romance languages, especially the Provençal). Slavic subjects would be undertaken either by the Jakob woman or by Herr Gurowski; the former indeed understands more about these languages than I do.

"Which articles will you undertake? In any case, German philosophy--Biography of modern English and French statesmen? Some financial subjects? Chartism? Communism? Socialism? Aristotle --Epicurus--Code Napoléon--and the like. Without any party tendency whatever, such topics are certainly harder to handle than the nice military subjects, where it goes without saying one is always on the side of the victor.

"Take as many articles as you can get, and gradually organize a bureau. M. Pieper can also slave away at it; he is very serviceable for biographical material and also keeps some useful dull information in his ingenious skull. Perhaps Lupus also would be ready to do work in the field of classical antiquity; I'll see!

"Although the work will not be very interesting (at least not the biggest part of it), still the business gives me infinite pleasure since it will mean a tremendous lift for you. I have really been devilishly fearful how the *Tribune* affair would end, especially when Dana tried to put you on half pay; but now things will go all right; and while payment won't come very soon, still this is a very secure position, and one can always prepare a couple of letters of the alphabet in advance without worrying: the money will come along in good time. ...

"Have Dana also tell you whether the articles should in general take up more or less space than, for instance, in Brockhaus, and whether the whole thing is estimated to be larger or smaller in bulk than Brockhaus. Then we'll know where we stand. Also, *when* you get paid--and how soon the enterprise is to be completed. It's good to know all that.

"In your place I would propose to him to do the whole encyclopedia alone; we'd certainly bring it off. In any case, take what you can get; if we have 100 to 200 pages in every volume, that isn't too much; we can easily supply as much 'solid' erudition as there is solid California gold to pay for it."

(Wilhelm Steffen was at this time a friend of Marx's, in emigration; in 1852 he had been a witness for the defense in the Communist trial in Cologne. "Brockhaus" was the leading German encyclopedia. Therese Albertine Luise Robinson, née von Jakob, was a writer and translator of Serbian folk tales into German. Count Adam Gurowski was a Polish publicist who had emigrated to the U.S. in 1849 and wrote for the New York *Tribune*. Wilhelm Pieper had been a member of the Communist League; living in London as a journalist and philologist, he was friendly with Marx. "Lupus" was Wilhelm Wolff, a long-time close friend and comrade.)

Marx replied on 23 April that he would write Dana immediately, but that "there can be no talk about establishing a bureau here in London. There are no useful people here," after explaining why some of the friends mentioned by Engels were not available. Of himself he goes on to say:

"For my part, I would prefer to write articles for Dana like: Ricardo, Sismondi, etc. In any event, this sort of thing can be written objectively, in the Yankee sense. It is difficult to present German philosophy in English. However, I will propose various subjects to Dana and leave the choice to him."

Marx's letter of 8 May has a passage beginning, "I have written everything to Dana as you told me," but, while he is clearly referring to Engels' long letter of 22 April, it is unfortunately not clear whether this statement refers to Engels' propositions for the cyclopaedia or to another problem in Engels' letter (about an article on Bazancourt). The next sentence in fact refers to the latter, but in the following sentence Marx harks back to Engels' request about Steffen: "Steffen knows of no book like the one you need [an English military encyclopedia]; he himself seems to be busy with an English translation of Rüstow's *Cäsars Heerwesen*."

On 23 May, Marx wrote again:

"This morning the enclosed came from Dana. I find it puzzling how the Yankee can expect that the stuff for Volume 1 will be in New York by the beginning of July when he doesn't give us his commissions till the end of May.

"Give consideration once again to what articles should be offered, outside of the military subjects. Philosophical subjects are, in point of fact, too badly paid, and besides difficult to do in English. Do you know if there is any book at all in German or French on biographies of big industrialists?

"Just as puzzling to me: how aesthetics is to be handled in one page, fundamentally, and on the basis of Hegel.

"Does Lupus want to undertake something?"

Engels' reply of 28 May remarked, "Dana must be crazy to stipulate one page for Aesthetics," but this just about marked the end of the discussion about extending the range of articles to be done. As Mehring's *Karl Marx* says: "Nothing came of the suggestion that an office [the bureau] should be organized, chiefly because it proved impossible to obtain suitable co-operators, and apart from this, the prospects turned out to be far less brilliant than Engels had hoped..."

It is clear that only one of the

obstacles was Dana's insistence that the articles must be written nonpartisanly, though this alone would have made it difficult for Marx to undertake articles in the political fields suggested by Engels ("Chartism? Communism? Socialism?") without great frustration. Marx, who was then immersed in his economic studies, would have killed two birds with one stone if Dana had been willing to assign him subjects like "Ricardo, Sismondi, etc." but here too Dana was no doubt afraid of partisan presentations. Otherwise we might now have some first drafts of Marx's later *Theories of Surplus Value*. The project settled down to mostly the militaria, which,-as Engels had said with mordant irony, could more easily be written with no "party tendency whatever" because the military analyst "is always on the side of the victor."

Engels' letter of 28 May gets down to specifics with regard to the military articles:

> "Dana must be crazy to stipulate one page for aesthetics. Nor has the fellow got the faintest notion about military subjects. On the next page, a list of articles that occur to me, out of Brockhaus and my own memory. But since I must first compare an *English* military encyclopedia, these can't be definitive; who can remember all the technical expressions that begin with A in English. Apropos: there does exist such an encyclopedia by a scribbler of the lousiest kind, J. H. Stocqueler; can you make inquiries about price, size, etc.?
>
> "Very nice of him to want to have the articles--with the required profundity and conciseness yet!--by the first of July. Again, real Yankee. In any case it proves that more value is set on mere show than on actual content, as is already proved by the $2 per page.
>
> "Give Dana the list--as a *provisional* one--and tell him that, since with this rate of pay one can't do work on speculation, he should state just what he wants. (It's exactly these hackwork articles, which are the easiest, that make the pay acceptable.) A second list of *technical* terms for A will follow very soon. As soon as these are settled, he will, as far as I'm concerned, have the lists up to D, E or G, so he can then push the work straight on."

The list attached to this letter by Engels was as follows:

ENGELS' LIST OF 28 MAY 1857

Abensberg (battle of 1809)	1/4 p.
Abukir ditto	1/4 p.
Axle (artillery)	1/8 ditto
Acre, St. Jean d' (Sieges of)	1/4 ditto to 1/2
Actium (battle of)	1/3 to 1/4
Adjutant	1/4 to 1/2
Afghanistan (invasion by English)	2
Aland Isles see Bomarsund	
Albuera (battle)	1/4
Aldenhoven ditto 1797	1/4
Alessandria (fortress and sieges)	1/4
Algeria (French conquest of and English bombardment of)	2-3
Almeida (siege of in Peninsular War)	1/4
Amusette (artillery)	1/10
Anglesey (Marquis of)	1/2
Attack (in battle and siege)	1/2
Antwerp (fortress & sieges)	1
Approaches	1/2 fully
Arbela (battle of)	1/4
Arquebusier	1/8
Aspern and Essling (battle 1809)	3/4
Augereau (Marshal)	1/2
Advanced guard	1/2

Of this list of 23 subjects, only seven are included in this volume as part of the accepted canon (including "Arquebuse" for "Arquebusier); remarks on the others will be found in Appendix II.

But a siege of ill health put Engels out of commission for a speedy dispatch of the work such as he had confidently expected. Dana was pressing for the completed articles and Marx was in a quandary on how to explain the delay. On 6 July 1857 he wrote Engels:

> "..at this moment it's all a question of haste. You know that, on your advice, I sent still a second list to Dana; so what excuse can I give the man? I can't plead illness, since then I would have to entirely break off my *Tribune* correspondence and quite reduce my already very meager income. If Dana has to, he can resort to the man who has already supplied him with a part of the military articles. In this case I would be out of the picture. To avoid this, I must write Friday. The ticklish thing is to know what to write.
>
> "You realize that nothing is more disagreeable than to press upon you during your illness, and in fact when you left here I had no idea that you, in your condition, would immediately take up your desk work again, and indeed so seriously."

On 11 July 1857 Engels reported more optimistically on his health, and promised some of the articles for early delivery. By 25 August, he was wondering why Dana had not yet written about a list for the letter B. Marx (26 August) explained that "The situation with Dana is not very good." He had not wanted to bother Engels with the story during his illness, but as a matter of fact Dana had sent the B list a while back (Marx here enclosed this list but it has not been preserved). In this list, "There are only two non-military articles: 'Blum' and 'Bourrienne.'" Dana had written at the same time urging quick delivery of the articles and promising immediate payment on receipt. At this point Marx had had no excuse for not complying except to plead illness and domestic difficulties, and therefore had also to suspend the *Tribune* articles. "Meanwhile," continued Marx, "I learned that Major Ripley* is now co-editor of the *Tribune*, so in case of need Dana has a *pis-aller* for the Cyclopaedia."

Then Marx goes on to mention Engels' wavering physical condition, in spite of two batches of articles received from him, and to explain that, knowing that his illness would not permit him to keep up with Dana's expected demands, he made up an excuse to put off the New York editor. But: "On August 17 I received the enclosed letter from Dana. As for the letter B, there's no question at this time of completing it, but rather of getting it ready as fast as possible. If that isn't possible, the whole business will have to be given up." He adds: "The result is that my economic situation has become quite untenable and even my situation with the *Tribune* has become shaky."

However, they muddled through these difficulties of health and time to work, though occasional brief references in the correspondence continue to show the tension between pressure from New York and the difficulties caused by Engels' lingering health problems. On 18 September 1857 Engels was writing: "Which French generals and which of their heroic deeds do you want looked into more closely? Give me as much time as possible, since I can't work well more than two hours in a row."

In order to stall Dana a while,

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*Marx seems to be under the mistaken impression that Ripley was a military man. This reference to "Major" Ripley is no doubt the source of the similar error in a *MEW* note (Vol. 29, p.681, n.159). Marx's second error in this sentence is to refer to Ripley as co-editor of the *Tribune*. Ripley was co-editor of the cyclopaedia, but on the *Tribune* he was the literary editor and one of ten associate editors under Dana.

Marx had pretended he had mailed articles which Dana had never received. On 21 September Marx confesses the further difficulties this had gotten him into:

"Last Friday I got a letter from Dana, cool and curt. I answered him that I would put in a claim at the post office. Further: since I had 'Algeria' and 'Ammunition' on hand, I sent them off with the remark that I had kept a *copy* of them; that I still have 'Army' in the original and would forthwith get it copied and immediately sent off (I did this because in your last letters you repeatedly reported that 'Army' was nearly finished)... I have sent your B and C lists to Dana."

On 22 September 1857 Engels wrote that as soon as possible he would finish "some of B again, which you can use for mailing continuous shipments to Dana, and thereby improve the mood he's in. In the meantime I have put my hands on some money, and enclose a five-pound note." Marx was in dire financial straits at this point; on 23 September he wrote his friend: "The main thing, the only thing that can extricate me is rapid progress with the Cyclopaedia." On 19 October Engels again assured that he would "take care of some of the smaller pieces and send them to you from time to time, so that Dana will see things are still going along." His determination to get more articles to do was undiminished: "I'd like the list for D soon; else Mr. Dana will anticipate us again. What does the honorable man write otherwise--haven't you heard from him?" (29 October 1857.)

At the end of that month, Marx wrote that he had received two letters from Dana: "First, that 'Army' arrived in time. Second, that as a result of the commercial crisis all European correspondents [of the *Tribune*] except me and Bayard Taylor are being dismissed..." This naturally dimmed the prospects for Cyclopaedia work too.

In November Marx kept pressing Engels for the article "Artillery": "It's a matter of decisive moment (for me) to send stuff to America." (13 November.) But Engels was still incapable of full-scale work: explaining why he could not finish "Artillery," he wrote: "Only two evenings are left, and I cannot write every evening without my head spinning." (16 November.) And: "I cannot work much or continuously right now, but the most possible will be done." (7 December.)

This situation continued into 1858. On 5 January, Marx again had to raise the possibility of giving up the cyclopaedia work altogether in order to ease the strain on Engels:

"I am, in fact, in very embarrassed straits regarding the letter C. Since November 27 nothing more has been sent to Dana, since I long ago finished my part of the work (that is, the non-military part). If Manchester affairs do not permit you to get ahead with the thing in earnest, I'll have to put an end to the whole business and give Dana notice for the Cyclopaedia on some pretext or other. It is bound to make him suspicious in the end and to compromise me if I send long new lists and do not finish the old ones. Consequently also, he does not answer and sends nothing new. But such work can't even be remunerative, what with continual defaults for months.

"It's not possible for me to consider undertaking the military subjects myself; this would force me to spend a great deal of time in the Museum and yet not produce anything decent thereby, since I must absolutely finish the other jobs--and they take *all my time*--else the house would come crashing down on my head!

"So, my boy, try to come to a definite resolution--one way or the other."

But Engels refused to give up. Writing 6 January he reported he was beginning on C that very evening, and optimistically promised "you will be able to send something every week." Besides, he argued, "In the midst of this [business] crisis, the [*NAC*] people will not be in a hurry to go to press, else Dana would have written you long ago." (He was referring to Volume 3, but, as a matter of fact, the C articles did not begin until Volume 4.) On 7 January he was pressing Marx to get the D list from Dana.

On 23 January 1858 Marx sent Engels a letter just received from Dana, asking for new B articles:

> "The disagreeable result of it for me is that I am considerably in debt to the fellow, since I miscalculated my claims [for payment for articles] and drew on his funds again after sending off 'Cannon' [i.e. 'Artillery']. Besides, the pay is not even a penny a line.
>
> "Now as regards the new articles that Dana wants under B--and the main thing for me is to quickly pay the overdraft with Appleton, since otherwise I can't draw anything on the *Tribune* and therefore will be in danger of sinking--they are all taken from the list you drew up with *one* exception. As far as concerns the *one exception*, 'The History of the Bengal Rebellion,' it seems to me the most practical thing to do is to refuse Dana point-blank on this. Where come by the sources in the short space of time? Since it 'shall be sent at once' and 'as brief as possible', it would be quite a job, with absolutely no relationship between the pay and the amount of work, and it would only hinder the completion of the other articles. What is your opinion? The main thing is the military stuff, but the whole thing, military and political, does not seem to me to be developed enough to 'be sent at once.'"

Engels answered on 25 January: "It is totally impossible to do the Bengal Rebellion in the time required," and suggested that Dana postpone the subject to the H's, under "Hindustan Rebellion or something else.

The note of complaint at the low rate of pay in comparison with the work required was continued in Marx's letter of 29 January:

> "It is very good that you made 'Borodino' longer. Since the fellow's columns are so immense and his pay so bad, the only remedy is to stretch out the article. I hope that when you get to 'Cavalry' you will spread it out as much as you can, so that I'll be freed from my debt to the dogs."

Marx's letter of 1 February includes a little vignette of his working day: "Whenever I'm at the Museum, I have such a lot of stuff to look up that the time (now only till 4 o'clock) is gone before I look around. Then the trip home. Thus a lot of time is lost."

It is in this letter of 1 February 1858 that Marx also gives a long list of the B articles on which he and Engels worked. We insert it here for its bibliographic interest. It begins by referring to a "new" list of B articles sent by Dana:

> "The new B's are: *Bidassoa* (battle of), *Blenheim* (ditto), *Burmah* (war in), *Bomarsund* (siege), *Borodino* (battle), *Brescia* (assault), *Bridge-head*, *Bülow*, *Buda* (siege of), *Beresford*, *Berme*. When Dana says, ' most of them I asked you before,' that is an error. He is mixing up *your* list of B's with *his*. He himself requested only:
>
> "*Barbette*, *Bastion*, *Bayonet*, *Barclay de Tolly*, *Battery*, *Battle*, *Bem*, *Bennigsen*, *Berthier*, *Bernadotte*, *Bessières*, *Bivouac*, *Blindage*, *Blücher*, *Blum*, *Bolivar*, *Bomb*, *Bombardier*, *Bombardment*, *Bomb (Ketch*, *Proof*, *Vessel)*, *Bonnet*, *Bosquet*, *Bourrienne*, *Bridge* (pontoon), *Brown (Sir George)*, *Brune*, *Bugeaud*. (The ass has received all of these.)"

The financial difficulties with the drafts on the Appleton funds continued. Again on 14 February Marx wrote: "I had totally miscalculated in my estimate of the payment for the last pieces sent in," and such overdrafts increased his debt to the publisher. Engels replied with further complaints against the low rate of pay: "In any case he can no longer expect the sort of thing we send him--in very many cases independent works instead of the lousy compilations which he otherwise gets. Press him to pay better, and then we'll see." (18 February.)

On 22 February Marx explained his financial "deadlock" with Appleton due to the overdraft and his consequent debt, which he had to pay off in manuscripts. He opined that "the threat to stop the supply [of articles] would bring Dana and Appleton round and induce them to offer better payment," but this form of pressure could not be applied till the overdraft was paid off. In this letter Marx was in a rage with the New Yorkers: "With regard to the lousy Yankees, I would of course take the greatest pleasure in writing Messrs. Dana and Appleton both to kindly -- -- --." (The three blanks apparently represent bowdlerization by the *MEW* editors.)

Engels advised caution: "I am not of the opinion that we should possibly give up Appleton; then we would have to look to the Continent. The encyclopedia course is very useful to me, and in the last analysis the thing goes so slowly that, if our financial circumstances were less pressing, we could carry it on very comfortably. But in any case we will demand a vote of confidence as soon as conditions permit [i.e. ask for better pay]; I do believe this will help immediately." (24 February 1858.)

On 11 March 1858, Engels' letter harks back to Marx's miscalculations of how much the articles sent were going to bring: "I have a suspicion about friend Dana, that he considerably shortened our articles; otherwise you couldn't have miscalculated so badly. Some day at your convenience look up the encyclopedia in Trübner." This seems to mean that neither Marx nor Engels had so far bothered to look at their articles in the already published first volume, nor had the publisher sent a copy. We do not know from the correspondence whether Marx ever did check as Engels advised.

It was not until April of the following year that Marx finally did hold out for better pay, after Dana wrote on 15 March 1859 asking for articles on "Fortification" and "Infantry"--so we learn from Marx's letter to Engels of 9 April. Presumably Dana agreed, for the articles were written and delivered. Engels' article on "Fortification" was in Marx's hands on 10 June 1859, but "Infantry" was delayed. In September Marx was still awaiting it from Engels, in order to help solve his money troubles again: "On this article the question is not whether it is deep but whether it is long," he wrote on 23 September. But an eye inflammation delayed Engels still, and it was not until 10 October that Marx received the piece.

There is no direct statement in the correspondence on why the orders for articles from New York had dwindled; it may have been due as much to Dana as to Marx. The next request for an article did not come until 8 September 1860: Dana urgently asked for an article on "Navy." Marx, however, was initially reluctant. He wrote Engels on 25 September:

> "...After your stay here in London, I wrote Dana I would prefer it if he assigned the article 'Navy' to some other Cyclopaedia contributor. Since then I received no answer from him and believed the thing had been dropped, until the enclosed letter popped in. If it is at all possible for you to do the thing--it does not matter how short or superficial--this would be *of the greatest importance* to

me *right at this moment*, since I was forced on September 14 to get a two-month *advance* draft on Dana (payable two months from date) in order to get a breathing-space. I wrote him about it, appealing to his old friendship, since otherwise this is against the principles of the *Tribune*. Now my letter crossed his. So right now is the time to keep him in a good mood, besides keeping him believing we can do anything. So if it is at all possible, you would do me the greatest favor if you did the piece. Dana asks for a maximum of ten pages. Five will do also, if that's the way it goes. It's a question above all of sending him something."

The time was inopportune for Engels, and Marx did not get the article until 23 November 1860.

Following this date, we find Marx on two occasions telling correspondents that the Cyclopaedia had suspended operations because of the financial crisis (letter to Lassalle 15 February 1861; to Carl Siebel 28 March 1861.) Presumably Dana had written Marx to this effect; but if there was a suspension it was of brief duration. There is no record of any further requests from Dana for articles for the encyclopedia.

5
Notes on the Articles

These notes refer only to the 67 articles of the accepted canon. Notes on articles included in the various appendices will be found in Section 6 below.

Summarized here, in alphabetical order of the articles, is miscellaneous information from various sources, primarily two: the editorial matter in *MEW*, and references to the articles in the Marx-Engels correspondence. In the case of the latter, we have excluded routine passages, but all passages of general interest are given here in full. As for *MEW* notes, the great majority are historical-explanatory, and are omitted here. All references to *MEW* are to Volume 14 unless otherwise specified.

"AIREY"

From *MEW* (p.716, n.48):

"Engels was aided in writing this article by material which Marx gathered for him from English sources; the notes have survived. They include especially extracts from Airey's brochure *Addresses before Military Board at Chelsea* (London, 1856). The quotation given in the article is from this source."

"ALBUERA"

Engels' article on "Albuera" contained a minor mistake, Dana learned, and Marx heard from him about it in January 1858 soon after the publication of the first volume of the Cyclopaedia. The end of the article had mentioned that the siege of Badajoz fortress was lifted a few days after the battle of Albuera, which took place 16 May 1811, but in fact the siege had lasted till the beginning of June 1811. Informed by Marx, Engels wrote on 25 January that he had still not been able to check the fact: "As for the alleged mistake, I cannot look it up now... The note was taken from Brockhaus, so it should be quite correct." But in his letter of 18 February he groaned, "In the case of Badajoz, that wretched Brockhaus certainly led me astray."

"ALGERIA"

From *MEW* (p.724, n.82):

"The editors of the *NAC* made some changes in Engels' essay 'Algeria.' As is brought out in Engels' letter to Marx of 22 September 1857, there was contained in the original text--not available to us--a description of the liberation war of the Algerian people under the leadership of Abd el Kader against the French conquerors and a characterization of the colonial activity of Marshal Bugeaud in Algeria. These passages were cut out by the editors, to the detriment of the content, apparently because there was a special article already included in the Cyclopaedia on Abd el Kader and an essay 'Bugeaud,' commissioned from Marx, had been provided for. Also other signs of editorial interference [in the article] have been established."

The reference here to Engels' letter of 22 September 1857 is not well taken, since it by no means clearly states what this note ascribes to it. (See the text of the passage under "Bugeaud" below.) Perhaps the *MEW* editors are basing themselves on Dana's correspondence. The published article on "Algeria" does have a very strong and lengthy passage on the atrocities of French colonial rule in Algeria, so strong in fact as to be quite out of keeping with Dana's aim of "objective" presentation.

The note in *MEW* continues as follows on another aspect of the article; the editors object to the criticism expressed in the article on the Algerian piracy operations:

> "In writing this essay Engels understood enough to disregard the tendentious presentation of Algerian history in the bourgeois historical literature and in the bourgeois encyclopedias, although these were then the only sources available to him. (Engels used, above all, the essay 'Algeria' in *Wigand's Conversations-Lexicon*, Vol. 1, Leipzig, 1846, from which is evidently taken the quotation given on page 103 [of *MEW*, Vol. 14]). Since at that time the history of the African countries had not yet been fully researched, some obsolete and onesided presentations inevitably found their way into his essay from the sources he used, on certain questions. This is the case, for example, with respect to the representation of the role of the Christian powers in the struggle against the Algerian pirates (these powers, as is well known, to a great extent practised piracy themselves), and of the circumstances and motivation of the original seizure of Algeria by the French."

"ARMADA"

From *MEW* (p.737, n.165):

> "The original version of this essay 'Armada' was written by Engels essentially on the basis of material which Marx had collected and sent to him. There were excerpts which Marx had prepared from various sources. Some of the passages in this material which Marx worked up were taken over by Engels unchanged. After Marx received Engels' finished text, he clarified a number of pertinent details and then sent the contribution in its final form to New York."

"ARMY"

MEW (p.705-06, n.1) gives sources used for this article which are not included in our list of "Reference Works Used by Marx and Engels" in Appendix V:

> "Engels used many special sources for this article--from the works of the historians and military writers of ancient times (Herodotus, Xenophon, Sallust, Polybius, Vegetius, and others), as well as various encyclopedias. Some of these sources are mentioned by Engels in the article. Among the materials which he used for his preliminary work on this article, still extant are his excerpts from Rüstow's *Heerwesen und Kriegführung C. Julius Cäsars* (Gotha, 1855) as well as from the article 'Army' in the seventh edition of the *Encyclopaedia Britannica* (1842, Vol. 3). Marx likewise

made excerpts for Engels' article from scholarly works and encyclopedias on certain questions of military history. Also extant are his excerpts from the three volumes of [J. G.] Wilkinson's *Manners and Customs of the Ancient Egyptians* (London, 1837), as well as from works by Herodotus, Thucydides, Polybius, Josephus Flavius, and other ancient historians."

Engels spent a good deal of time on the article, with Marx acting as research assistant in the British Museum. The work required a review of virtually the entire span of military history. Marx, to hasten completion, suggested at the beginning that Engels postpone some sections to later headings:

"I think you can limit yourself simply to some generalities as far as the ancient world is concerned, and say straight out--in the article itself--that these topics will be treated under 'Greek Army' and 'Roman Army.' Thus time will be gained. Meanwhile we can not only get hold of the [book by] Rüstow but I can send you a mass of other details, since I have now found, after a long search, a complete collection of sources for the military history of ancient times, in the Museum." [6 July 1857.]

A few days later Marx sent some more notes for the article:

"The enclosed notes are not worth much, except perhaps a couple of quotations. I have, to be sure, looked at the *Encyclopaedia Britannica*, but did not have time to read it really thoroughly. So I'm afraid these notes will hardly have anything new for you. Also used: Ersch and Gruber, *Encyclopédie Universelle* [*Allgemeine Encyclopädie* &c.]; Pauly, *Realencyclopädie der Classischen Alterthumswissenschaft* (1844-52). Just now it is impossible for me to read the works themselves. It's a pity I didn't get to it sooner. The *Encyclopaedia Britannica* is copied pretty much word for word from the German and French works, and therefore hard to get away from, without reading the specialist works themselves." [16 July 1857.]

In view of the remarks in this letter about the various encyclopedias, this is as good a place as any to mention some other comments on the same subject. We have already quoted Engels' letter of 22 April 1857. On 25 September Marx wrote:

"For my biographies, etc. I was naturally forced to look up all kinds of encyclopedias, including German ones. In so doing, I found that under the headings 'Labor,' 'Classes,' "Production,' etc., we are honestly being cribbed, but stupidly. Yet they all avoid mentioning us, even when they devote columns to Herr Edgar Bauer and similar great men. *Tant mieux pour nous*. The biographies in the German encyclopedias are written for children under eight. The French ones are partisan, but at least sophisticated. The English encyclopedias honestly plagiarize the French and German. In the German encyclopedias the same fellows seem to give out with the same piss for the most varied publishers. Ersch and Gruber is good only in the later volumes, which contain many scholarly studies. ...

"[P.S.] Pauly's *Realencyclopädie des Althertums* is solid."

It is in the same letter of 25 September 1857 that Marx acknowledged receipt of the finished article from Engels, and wrote an appreciation of the essay which is itself of great interest:

"Your 'Army' is very fine...

"The history of the *Army* brings out more clearly than anything else the correctness of our view on the connection between the productive forces and social relations. In general the army is important for economic development. For example, wages were fully developed among the ancients first in the army. Similarly among the Romans the *peculium castrense* [soldiers' camp property] was the first legal form which recognized movable property of anyone other than the father of a family. Similarly, the guild system among the corporation of *fabri* [army artisans]. Similarly here the first use of machinery on a large scale. Even the special value of metals and their use as money appears to rest originally --as soon as Grimm's Stone Age was over--on their military significance. Also, the division of labor *within* one branch was first carried out in the army. The whole history of bourgeois society, furthermore, is very strikingly summarized herein. If you ever have the time, you must work the thing out from this standpoint.

"The only points which have been omitted from your presentation, in my opinion, are: (1) The first fully formed appearance of the mercenary soldier system, on a large scale and all at once, among the Carthaginians. (For our private use I will look up a work by a Berliner on the Carthaginian army, one which I became acquainted with only later.) [This probably refers to Wilhelm Bötticher's *Geschichte der Carthager*, Berlin, 1827.]

"(2) The development of the army system in Italy in the 15th and beginning of the 16th century. At any rate, tactical tricks were worked out here. Likewise extremely humorous is Machiavelli's description ... in his *History of Florence* of the way the condottieri fought one another. ...

"(3) Finally, the Asiatic military system, as it appeared first among the Persians but then came in, although very variously modified, among the Mongolians and Turks, etc."

"ARTILLERY"

MEW (p.739, n.178 & 180) fills out two bibliographic references that occur in the article. The mention of Charles Hippolyte de Paravey near the beginning "evidently refers to Paravey's work *Mémoire sur la découverte très ancienne en Asie et dans l'Indo-Perse de la poudre à canon et des armes à feu*" (Paris, 1850). A little later the reference is to Roger Bacon's *Epistolae Fratris Rogerii Baconis, de secretis operibus artis et naturae, et de nullitate magiae*, which was then generally dated 1216 as Engels does, but which is now assigned to the 1240s.

"AYACUCHO"

From *MEW* (p.737, n.166): In describing the battle in this article, Engels used notes made by Marx, sent to Manchester with his letter of 21 September 1857. The final part of the piece comes from Marx. The characterization of Espartero and his supporters expresses the evaluation which Marx had given in his article "Espartero" published in the New York *Daily Tribune* of 19 August 1854 as a leading article.

"BARCLAY DE TOLLY"

MEW (p.720, n.64) says this was a joint work, though Marx was responsible for the finished form. Among the sources used: Martens, *Recueil de traités d'alliance, de paix, de neutralité*; Jomini, *Vie politique et militaire de Napoléon*, Vol. 4; and Theodor von Bernhardi, *Denkwürdigkeiten aus dem Leben des kaiserl. russ. Generals von der Infanterie Carl Friedrich Grafen von Toll*, Leipzig, 1856. In the first sentence of the *NAC* article, Barclay's birth date is given as 1759, corrected in *MEW* to 1761.

In this *MEW* note, there is a long polemical passage directed against Marx-Engels' dim evaluation of the Russian general Kutusoff (to use the *NAC* spelling). It contends, in accordance with the Soviet hestorical line, that Kutusoff was a better general than Barclay. It goes as follows, referring to the three sources listed above:

"In these books, the history of the Fatherland War of 1812 is given tendentiously, sometimes completely distorted. This was inevitably reflected in the judgments of some aspects made in the essay by Marx and Engels, since they lacked objective sources at that time. In particular, inaccurately presented in this essay are the reasons for the appointment of Kutusoff to the post of commander-in-chief of the Russian army, his motivation for giving up the position at Gshatsk (more precisely, at Zarevo-Saimistsche), and his role in the leadership of the broader military operations of the Russian troops. Entirely unfounded is the contrast made between Kutusoff and Barclay de Tolly; the latter was an important general and a patriot of Russia, but he was considerably inferior to the great general Kutusoff in strategic ability, grasp of the nature of war, military experience, and authority among the army and the people. It was precisely these facts which forced Czar Alexander I., in spite of his hostility to Kutusoff, to agree to the appointment of Kutusoff as commander-in-chief, under the pressure of public opinion."

A further note (n.69) enlarges on the reference to Kutusoff's position at Zarevo-Saimistsche:

"...southwest of Gshatsk, which the Russian troops entered on August 29. The position was given up by the Russian army on the decision of Kutusoff... Kutusoff intended to launch a decisive battle against the French with a favorable relation of forces, for which purpose, however, he had to await reinforcements, to gain time and unite with the main forces. On these grounds the Russian army withdrew from Zarevo-Saimistsche to Borodino."

"BATTERY"

Of the published article, only the first part is by Engels, and only this part is reproduced in this book. The rest, beginning with "Floating Batteries," was added in New York--"evidently by an American specialist," says *MEW* (p.728, n.111).

"BEM"

From *MEW* (p.729, n.113):

"Marx wrote the largest part of this essay. The political characterization of Bem is by him, as well as the final editing and the literary form of the whole sketch. On the other hand, Marx took over almost word for word the characterization of Bem as a military man, and the avaluation of his military activity during the Polish uprising of 1830-31 and during the revolutionary war in Siebenbürgen (1848-49), that are found in Engels' letter to Marx of 18 September 1857 and also in the notes which he specially put together for Marx. In addition Engels helped Marx in the selection and refining of the biographical material."

Marx to Engels, 15 September 1857:

"About Bem's Polish deeds, I find the following: 'He distinguished himself in the battle of Iganin, in which he fought with 12 light and 4 heavy guns against 40 Russian cannon of heavy caliber; then in the battle of Ostrolenka. Here he advanced with his battery at a galop up to the Russian skirmish line, directed an annihilating fire against the divisions that had crossed the Narew River, withstood heavy fire from 80 cannon and forced the enemy to retreat. Following this engagement, [he was made] a colonel, soon afterward commander-in-chief of the whole artillery, and a general when the Polish battle force was concentrated in Warsaw. During the days of September 5-6, Bem brought the whole power of his artillery into the struggle, while he placed the fieldpieces between the individual defense-works of the outer line, pushed forward on the 6th with 40 cannon up to Wola, which had already been taken by the Russians, but, supported neither by infantry nor cavalry, had to retire. When the Polish army moved on Praga on the night of the 7th, he captured the bridge with 40 cannon, but on the morning of the 8th received news of the agreement made with the Russians and Malachowski's order to move to Modlin with the artillery. See his statement, *Allgemeine Augsburger Zeitung* for 1831, in which he discusses the latter events and attacks Krukowiecki.' [This quotation is from an unidentified source.]

"Since I do not trust the foregoing authority, I ask you to check this passage and fix it up for me briefly in the best equivalent English."

Engels replied on the 18th:

"Regarding Bem I would say only the following: [The following paragraph is in English]

"At the battle of Iganin, where he commanded the artillery, he was noticed for the skill and perseverance with which he fought it against the superior Russian batteries. At Ostrolenka, he again commanded the artillery in this capacity; when the Polish army had been finally repulsed in its attacks against the Russians who had passed the Narew, he covered the retreat by a bold advance with the whole of his guns. He was now created colonel, soon after general and called to the command in chief of the whole Polish artillery. When the Russians assaulted the entrenchments of Warsaw and took Wola, Bem advanced with forty guns against this, the principal work of the whole line, but the superior force of Russian artillery opposed to him prevented the Polish infantry from returning to the assault and compelled Bem to retire.

"The rest of the stuff is entirely commonplace. On Iganin I have no materials here; it was not a very important military action—a defense of an embankment which as usual was made useless by a flanking movement—the 40 cannon of *heavy* caliber are flatly a lie; likewise the *retreat* of the Russians to Ostrolenka, which might hold true only for skirmish or support troops or a couple of exposed battalions. What I say in the foregoing [paragraph] is the most favorable view, for Diebitsch *forbade* pursuit."

"BENNIGSEN"

From *MEW* (p.725-26, n.92):

"As is clear from Engels' letter to Marx of 10 September 1857 as well as from the preparatory material which has survived, the first draft of this essay was written by Engels. For this purpose Engels leaned on such sources as Jomini's *Vie politique et militaire de Napoléon* (Paris, 1827) and others. This draft was supplemented by material from Marx, which he took from the French encyclopedia *Biographie Universelle*, Vol. 3, Paris, 1854, from Napoleon's memoirs (*Mémoires, pour servir à l'histoire de France, sous Napoléon...*, Paris, 1823) as well as other works."

There is no notice taken by the *MEW* editors of the fact that, in the *NAC* article, the subject's name is spelled Benningsen throughout. *MEW* uses the spelling Bennigsen throughout, in all volumes, without comment on the discrepancy.

The spelling with the extra *n* persisted throughout the Appleton encyclopedias; it remained so in the *American Cyclopaedia* (the "second edition"). In *Johnson's Universal Cyclopaedia*, published jointly by Appleton and A. J. Johnson in

1896, the spelling is said to be "Bennigsen, or Benningsen"; likewise in the new edition of this work entitled the *Universal Cyclopaedia*, issued by the same joint publishers in 1900.

The spelling with *ing* is not found in any modern reference work as far as I have been able to check, with one exception mentioned below, and not in any books about the man. However, this spelling *is* found in some French encyclopedic works of the 19th century: Larousse's *Grand Dictionnaire Universel du XIXe Siècle*, Vol. 2, 1867; Dezobry and Bachelet's *Dictionnaire Général de Biographie et d'Histoire*, 1888; and *Nouvelle Biographie Générale*, ed. Dr. Hoefer, Vol. 5 (Paris, Didot, 1866). Of course, all of these were published after the writing of the *NAC* article, but the *Nouvelle Biographie Générale* refers to two earlier sources. One is given simply as *Conversations-Lexicon*, but the spelling with *ing* does not show up in any of the works with something like this title in whole or part that I have been able to consult. The other reference is to "*Die Zeitgenossen*, 1822, 2nd series." I have not been able to consult the second series, but an examination of the first series of this work shows it to be an unreliable source; it is possible that the *ing* spelling derives from it.

Among American reference works, the *ing* spelling is still to be found in *Lippincott's Pronouncing Biographical Dictionary*, ed. Joseph Thomas, 5th ed., 1930, which lists the subject as "Benningsen, written also Bennigsen," and refers as source to the *Nouvelle Biographie Générale*. But there is an earlier case more to the point: the *Encyclopaedia Americana*, Vol. 2, 1849, which was the leading American encyclopedia when the *NAC* was being put together--and its entry is spelled Benningsen. It is possible, then, that the *NAC* editorial office adopted the spelling Benningsen from its rival.

"BERESFORD"

From *MEW* (p.749, n.236):

"The original draft of the article was by Engels; it was materially supplemented, and sent to New York in final form, by Marx. When Marx and Engels were working on the essay, it is obvious from the various excerpts they copied, and also from Engels' letter to Marx of 11 March 1858, that they collected the material for the article from various sources: Engels used mainly Napier's work *History of the War in the Peninsula*; Marx used reference works and encyclopedias."

This was one of the few that Engels tried to get out of doing, asking Marx on 18 February 1858, "Can't you undertake 'Bülow' and 'Beresford'? I don't have the framework for these biographies here, but can give you the main military points." Marx answered, "I can write the biographical matter, but *you write the whole military part, in English,* so that these articles don't sound different from the others. Besides, mere hints [from you] will not serve me here, since to carry them out I'd have to go into studies that are presently impossible for me." (22 February.) On the 24th Engels wrote more encouragingly, "I can quickly ferret out the necessary material on Beresford..." but the article still remained a bit of "unpleasantness" (letter of 4 March). Transmitting the article on 11 March, he remarked:

> "Herewith what I have been able to put together on 'Beresford' out of Napier. On his expedition to Buenos Aires at the beginning of the century, I have been able to find nothing; but it is glorious and would be worth the trouble of looking it up. He capitulated, rump and stump, with all the English troops."

"BERNADOTTE"

From *MEW* (p.735, n.153):

"When Marx wrote the essay 'Bernadotte,' Engels provided him, in his letters of 21 and 22 September 1857, with very thorough details on the military activity of Bernadotte, especially on his part in Napoleon's campaigns against Prussia in 1806 and against Austria in 1809. The evaluation which Engels gave of Bernadotte's role in these campaigns was adopted by Marx almost word for word. Since Marx was concerned to illuminate all sides of Bernadotte and to evaluate him above all as a statesman and diplomat, he collected comprehensive biographical material, as is shown by the extant extracts from encyclopedias and historical literature."

There was an extensive cross-discussion of Bernadotte in the correspondence. Engels sketched out a treatment as follows in a letter written on 11 or 12 September 1857:

"In 1813 Bernadotte was not a general but a diplomat. He prevented the generals under him from taking the offensive, and when Bülow in spite of his orders had won two victories, at Grossbeeren and Dennewitz, Bernadotte stopped the pursuit. He continued to maintain connections with the French. When Blücher had marched to the Elbe to unite forces with him in order to force him to act finally, still he held back until Sir Ch. Stewart (the English commissioner in his camp) declared that if he did not march now he would not pay out another penny. This helped--nevertheless the Swedes appeared at [the battle of] Leipzig under fire only *honoris causa* and did not lose 200 men in battle during the whole campaign. -- Bernadotte was the French ambassador in Vienna in 1798; he flew the tricolor in celebration of a victory over the Austrians, the people stormed his hotel and burned the flag. He took his departure, but Napoleon decided against him and moved the Directory to let the matter drop."

Marx commented in a letter of 17 September:

"'Bernadotte' is tricky to deal with. The French generals who wrote under Louis-Philippe are mostly his unconditional partisans; the present-day writers under Boustrapa [Louis Bonaparte] equally his unconditional opponents. The main controversial points, on which I am asking you for information, are these:

(1) His participation in the battle of Austerlitz through the maneuvers which he executed before it.

(2) His behavior in the battle of Jena; and *before* the battle of Eylau.

(3) His behavior in the battle of Wagram.

"As to his ambassadorship in Vienna, the case is not exactly the way you put it. It has been proved (among others, Schlosser's *Zur Beurtheilung Napoleons*) that the Bonapartist newspapers in Paris denounced Bernadotte as a royalist because he did *not* hang out the French flag. They drove him to that step of his which Bonaparte afterwards disavowed.

"On the whole Bonaparte sensed that Bernadotte was the 'statesman' among his generals, one who followed his 'own plans.' He and particularly his brothers, through their petty and mean intrigues against Bernadotte, gave him a more important position than he would otherwise have been able to maintain.

"Napoleon was, in general, vile to every individual whom he credited with having 'personal aims.'"

Engels' answer to these questions came under date 21 September:

"*Austerlitz*. He [Bernadotte] was sent by Napoleon to Iglau, to observe from there the Archduke Ferdinand in Bohemia; in good time he received Napoleon's command to come to Brünn, which he did; was placed with his corps between Soult and Lannes (in the center), and helped to throw back the outflanking move through the allied right wing. I do not recall any especially important action by Bernadotte in these circumstances; nor do I find anything in Jomini.

"*Jena.* Here it is established that Bernadotte did indeed receive the command from Napoleon to withdraw from Naumburg to Dornburg, while Davout, who was also in Naumburg, was supposed to march on Apolda. In the order sent to Davout it was stated that if Bernadotte had already united with him, both of them should march on Apolda. Davout wanted to do this, since he had himself reconnoitered the Prussians' line of march and convinced himself that Bernadotte would not run into any of the enemy in the direction of Dornburg. He even offered *to put himself under Bernadotte's command.* But the latter remained unbending about the fact that in the order that came to *him* the reference to Apolda did not appear, and he marched off. The consequence was that he marched around the whole day of the 14th without finding the enemy, while Davout had to give battle alone at Auerstedt; had Bernadotte been there, or had he only marched off toward the thundering of the cannon on the 14th, then this victory which was at bottom indecisive would have been as decisive as the battle of Jena. Only the encounter of the Prussian army at Auerstedt with the fugitives from Jena, and the strategic preparation for the battle by Napoleon, thereupon made the affair a decisive one in its consequences nevertheless. No one has gotten to the bottom of *why* Bernadotte did that. Jomini calls it *une exactitude trop scrupuleuse.* Apparently he enjoyed, by the literal execution of the order, to cast discredit on Napoleon, since here indeed Napoleon worked on the basis of false premises.

"*Eylau.* When Bennigsen set out to strike at the troops of Ney, who had pushed too far and stood to the left rear of Bernadotte, Napoleon laid a trap for him; Ney moved south, Bernadotte back to the southwest, with an order to lure Bennigsen to the Vistula, while Napoleon marched from Poland north on Bennigsen's lines of communication. A staff officer with written orders for Bernadotte was captured by the Cossacks, and Bennigsen thereby discovered the threatening danger, which he barely got past. On his part Bernadotte was left without instructions by this same contingency, and therefore behind the line. I don't see there is anything in this to reproach him for.

"*Wagram.* On the first day of battle, 'Eugène debouched near Wagram; but, fighting here in the midst of enemy reserves, and not being supported by Bernadotte, who had engaged battle neither soon enough nor boldly enough, he was attacked from front and flank, and was pulled back sharply right up to my guard.' [This quotation is from Henri Jomini, *Vie politique et militaire de Napoléon...*, t.3, p. 266.] On the second day of the battle I find nothing special on Bernadotte.

"In any case, Monsieur Bernadotte was not a very great general; he in no way really distinguished himself; and as a politician the Gascon stuck out all over him--fine idea that, to want to succeed Napoleon as emperor!

Engels continued in a letter the next day:

"Some more on Bernadotte at Wagram: When on July 5, especially because of his half-hearted behavior, the French were held up in their attack, Bernadotte in the center had taken the village of Adlerklaa, which projected out a bit in front of the French line; and on the morning of the 6th, when the Austrians moved forward to a concentric attack, he stood on the open plain in *front* of it, instead of having a strongly occupied Adlerklaa before his own front. When the Austrians came on, he found this position too hazardous (for days before, his troops had finally been suffering severe losses because of his half-hearted behavior) and moved onto a plateau *behind* Adlerklaa, but left *no occupation force* in the village, which Bellegarde's Austrians immediately proceeded to occupy in strength.

"As a result of this, the French center was threatened, and Masséna, who commanded it, sent out a division which re-took it but were in turn expelled from it by D'Aspre's grenadiers. Then Napoleon himself came and took over the leadership, formulated a new plan of battle, and thereby thwarted the Austrians' maneuvers. Bernadotte's boners here are entirely indisputable, if Jomini's presentation is at all correct."

Much of this went to shape the finished article.

"BERTHIER"

Engels to Marx, 11 or 12 September 1857, in a letter of which only a fragment remains, beginning as follows:

"...Berthier was simply a clerk, without any ideas but frightfully zealous and precise; when Napoleon sent him to Bavaria in 1809 to reorganize the troops, even before he arrived he had divided the army into three parts through *ordres et contre-ordres*: Davout with half at Regensburg, Masséna with the other half at Augsburg, in-between them the Bavarians at Abensberg, so that if Archduke Karl had advanced quickly, he could have beaten the corps one at a time. Only Napoleon's arrival and the Austrians' slowness saved the French."

"BESSIERES"

In his letter of 17 September 1857 Marx asked Engels for a military evaluation of Bessières. Engels replied: "On Bessières the only thing I can say is that he mostly commanded the guard, especially the cavalry--a post in which brains were pretty much superfluous. He was a good sort, that's all." (21 September 1857.)

"BLÜCHER"

From *MEW* (p.737-38, n.168):

"Most of the biographical details for this essay were collected by Marx. In addition Marx took care of the final editing as well as of the literary shaping of the text, in which he used passages from a letter written to him by Engels on 22 September 1857. These passages concern especially the characterization of Blücher as a military commander, and contain an evaluation of his performance in battle in the most important campaigns. This characterization, which was supplemented by Marx with factual material and a thorough description of Blücher's activity as a general, formed the nucleus of the article. Engels' collaboration was also evidenced by his extracts from Müffling's book, quoted in the text, *Passages from my life...*, which described the campaign of 1813-14 -- a book which Marx also used as a source."

Marx opened the discussion with Engels by writing on 17 September 1857: "'Blücher' you have to write up regarding his main battles, his general military character, lastly his tactical merits which are so much emphasized by von Griesheim," referring to Gustav von Griesheim, *Vorlesungen über die Taktik*, Berlin, 1855. Engels answered, "One of these days I will also send you something on Blüucher, as soon as I have read through Müffling." (18 September.) On 22 September, Engels included a long section on Blücher in his letter:

"*Blücher*. During the campaign in

the Palatinate, 1794, he distinguished himself as an outpost general and as leader of the light cavalry. The best proof of this is his published Journal, which still qualifies as a classic work, in spite of the bad German. He kept the French in a continual state of alarm, provided headquarters with the best reports on the enemy's movements, continually carried out surprise attacks and raids, usually with success. In 1806 at Auerstedt his cavalry charge miscarried; his advice, to repeat it reinforced with all available strength, was rejected *(this from memory)*. His retreat to Lübeck and his vindication in the end was one of the few honorable episodes in this history, although his strategic maneuvers during this time were often cavalierly made; and his final capture was not his own fault, since he, like the whole Prussian army, was cut off, and in addition he had the longest detour to make around the rearguard. During the period up to 1813, he was regarded by Von Scharnhorst and the Tugendbund (Gneisenau was, as is known, one of the leaders and therefore remained suspect in the eyes of the king all his life) as the only possible leader of the kind who would be useful to them, and he was made out a hero, as was Hecker by Blind and his associates; and they had chosen their man very well. He was, as Müffling says, the very model of a soldier; besides he had all the popular passions against Napoleon and the French to the highest degree; had plebeian hankerings, dialect, style of speaking, and manners; enormous talent for gaining the common man's enthusiasm for himself; and as a military man, foolhardy bravery, a very quick eye for terrain, boldness in decision, and enough intelligence to work out the most correct decisions *himself* in the simpler cases, and to rely on Gneisenau and Müffling in the more difficult ones. Of strategy he did not understand an iota.

"'It was no secret to Europe that Prince Blücher who had now, 1815, passed his 70th year, understood nothing whatever of the conduct of a war; so little, indeed, that when a plan was laid before him for approval, even relating to some unimportant operation, he could not form any clear idea of it or judge whether it was good or bad.' [Quotation from Müffling, p. 225.]

"In fact, he could not understand a map and shared this strategic ignorance with nearly half of Napoleon's marshals. For this he had Gneisenau, in whom he had the most unconditional confidence. The campaign of 1813 and 1814 took an entirely different ending without Blücher; no other general of the time had achieved what he did: out of the most refractory elements (Langeron and York in open revolt against him) he built a solid army out of one victory and a vigorous pursuit (Katzbach), an army which was capable of anything and with which he could, on his own responsibility, risk making the march on Wartenburg and the Saale --a march which was militarily very rash but politically very necessary because of Bernadotte--whereby he gave up all his lines of communication, and even forced the decadent grand army (which he had saved in Silesia after the battle of Dresden by his pursuit of the French up to Bautzen, so that Napoleon had to turn back to meet him) to risk the battle of Leipzig. At that time, everything in general had a touch of rebellion about it; and Blücher had made a pact with 3/4 of the Northern army (Bülow, Tauentzien, Wintzingerode) that, if Bernadotte did not march, they would unite with Blücher--on their own responsibility. After the battle of Leipzig, Blücher was the only one to do something toward a pursuit, although this was not what it should have been--he was hindered because the princes were there. In 1814 the strategic boners which were so severely punished in the Montmirail region are to be written down to the account of Gneisenau and Müffling; the decision to march on Paris at any cost, whereby the campaign was decided, stands to the advantage of Blücher; in 1815 Blücher is to be given a high valuation for his march on Waterloo, after the battle of Ligny; this march stands almost alone, and no general other than Blücher would have obtained such efforts from his soldiers;--immediately thereafter, the model pursuit to Paris, which stands as a classic example like the one from Jena to Stettin. That Blücher could even impress better generals is shown by his relations with Langeron (who had commanded a large army against the Turks and was a well-educated German emigrant) and York, who not only quickly submitted to his leadership despite all their initial recalcitrance but even entirely took his side and became his best lieutenants. Basically Blücher was a cavalry general; this was his specialty and here he excelled, since it is a purely tactical department and presupposes no strategic knowledge. He demanded much from his troops, but they did it, and willingly; and I do not believe that any general of the 19th century other than Napoleon and recently Radetzky was in a position to exact so much from them as was Blücher. It must also be recognized that never and nowhere did he ever lose his head or his courage, that he was a tenacious in defense as energetic in attack, and of swift decisiveness in tight situations. Finally, in the 1813-15 war, which was half an insurrectionary war, he was completely in place and was well supplemented by his staff; and in this situation he was a *very dangerous* adversary."

"BOLIVAR"

In this article Marx definitely slanted the account toward a highly critical view of Bolivar, both as a personality and as a dictator. From the political standpoint it is one of the most interesting of the articles, since Marx's revulsion against the authoritarian character of the "Liberator" comes through so sharply. Indeed, Dana objected to it on this account. Marx told Engels in a letter of 14 February 1858:

> "With regard to a rather long article on 'Bolivar,' Dana furthermore expresses misgivings because it is written in a partisan style, and he asks for my authorities. Of course, I can give them to him, though it is a peculiar demand. As for the partisan style, I did somewhat drop the encyclopedic tone, to be sure. To see the most cowardly, mean and wretched scoundrel decried as Napoleon I. was somewhat too absurd. Bolivar is a true Soulouque."

This is why the article appeared in the *NAC* with a list of three sources appended as furnished by Marx. In each of the three, there is a mistake in citing the author or title. The first, by Gen. H. Lafayette Villaume Ducoudray-Holstein, is listed by Marx in the French version, with the spelling "Ducoudrey" --although *MEW* (p.744, n.203) states that Marx actually used the 1830 London edition in two volumes entitled *Memoirs of Simon Bolivar*, as shown by the extracts he left. The second is given by Marx as *Memoirs of Gen. John Miller...*, but there is a mistake here too. John Miller edited these memoirs by his brother General William Miller; the correct title is *Memoirs of General Miller*. There is an error also in the title of the third as given by Marx; it should read *A Narrative of the Expedition to the Rivers Orinoco and Apure, in South America*, by G. Hippisley. All three of these are accounts by foreign legionnaires who had served with Bolivar and turned hostile to him.

Dana published Marx's article, perhaps overcoming his misgivings; but it may be noted that when the contents of the *NAC* were revised for the *American Cyclopaedia*, the article was substantially rewritten. The material unfavorable to Bolivar was much reduced; many stings were removed; and the new article ended with a passage which strongly repudiated any hostile view, even hailing Bolivar for his "love of freedom."

The reference in Marx's letter contrasting Bolivar with Napleon reflects the low estimate which Marx had gathered of the "Liberator" from his sources, who denied him military ability and any qualities of greatness. In this period Marx was in the full swing of opposition to Bonapartism, but the immediate butt is not the first Napoleon but the nephew, Louis Bonaparte. This explains the remark about Faustin Soulouque. Soulouque, whose showy coronation as Emperor of Haiti took place in 1852 just a few months before the "Emperor of the French" was proclaimed in Paris, was really a stand-in for Louis Bonaparte, who was customarily called the "French Soulouque" by the anti-Bonapartist press, and by Marx also. The political hostility to Bolivar which had been awakened by the research for his *NAC* article showed up twice in Marx's next long work, also an anti-Bonapartist polemic, *Herr Vogt* (1860)--for which see *MEW*, Vol. 14, p.575, 685.

When Marx's "Bolivar" was reprinted in the American Communist-sponsored collection of Marx-Engels articles *Revolution in Spain* (N.Y., International Publishers, 1939), it was accompanied by no editorial comment. As late as 1951, when William Z. Foster published his *Outline Political History of the Americas* (same publisher), Marx's article was quoted favorably as a guide to Bolivar. But when the second Russian edition of the Marx-Engels *Sochineniia* (Vol. 14, 1959) was published, it became clear that this was not the "correct" Soviet party line on Latin American history. The polemic against Marx's interpretation was carried over, in translation, to *MEW*. The longest attack, couched in terms of "excusing" Marx for not knowing any better in his day, is here quoted from *MEW* (p. 742-43, n.199):

"The essay 'Bolivar y Ponte' was written by Marx in a period when the history of the struggle of the Latin American countries for their independence (1810 to 1826) had been very little researched. At that time, the books and memoirs of those European adventurers who had taken part in this struggle out of self-serving motives were rather widely disseminated. Since they had not got what they wanted in Latin America, many of them portrayed the struggle for independence of these countries in a distorted way. This applies also to the memoirs of the Frenchman Ducoudray-Holstein, who had been Bolivar's chief of staff for a while and then became his enemy; to the book of the Englishman Hippisley, who had deserted from Bolivar's army, as well as to the *Memoirs of General Miller*, which is an untrustworthy editing of the notes recorded by William Miller, one of the participants in the Peruvian struggle for independence, by his brother John. In these books the struggle of the Latin Americans and many of their leaders were tendentiously portrayed. These authors especially imputed to Bolivar many bad qualities of character (treacherousness, arrogance, cowardice), while his real weaknesses (love of ostentation and power, which especially came to light in his last years when he based himself on the conservative nobility and the church) was exaggerated out of proportion. Bolivar's struggle against the federalist-separatist elements and for the unification of the Latin American republics was portrayed by these authors as the demands of a dictator. Also contained in these accounts are pronounced inaccuracies, like (among others) the incorrect assertion of Ducoudray-Holstein about Bolivar's refusal in 1810 to take part in the struggle for Venezuela's independence.

"In reality Simon Bolivar played an outstanding role in the struggle for Latin American independence, as has been established by later objective investigations. He succeeded in binding together for a while in this struggle the patriotic elements of the Creole landowners (Latin Americans of Spanish descent), the bourgeoisie, and the mass of people, including the Indians and Negroes. Through all the contradictions, Bolivar led the struggle for the liberation of a series of Latin American countries from the Spanish yoke, for the erection of a republican form of government in these countries, and for the carrying out of some progressive bourgeois reforms.

"Naturally Marx had at that time no other sources at his disposal than the books of the authors mentioned, whose bias was then only little known. It was therefore inevitable that Marx got a onesided view of Bolivar's personality which was reflected in his essay. This striving of Bolivar's for personal power which was exaggerated in the literature mentioned could not remain without influence on Marx's attitude toward Bolivar. In Bolivar's politics there emerged features of Bonapartism, against which in that period Marx and Engels were carrying on an irreconcilable struggle. Nevertheless Marx did not overlook such progressive sides of Bolivar's work as the liberation of the Negro slaves. Seen as a whole, he ascribed great significance to the anti-colonial movement of the Latin American people and evaluated it as a revolutionary liberation movement."

A condensed version appears in *MEW*, Vol. 29, p.692, n.259. In the Foreword to Vol. 14 signed by the Institute of Marxism-Leninism at Moscow, there is this further elaboration:

"...Marx's antipathy toward this political leader was influenced to a certain extent by the basically anti-Bonapartist attitude of Marx and Engels' political journalism during these years, their efforts to destroy the reactionary cult around Napoleon I. and his imitators, among whom Marx also included Bolivar on the basis of his sources (of whose dubiousness he could not be convinced at that time)."

Further annotations in *MEW* supply the sources of some of the quotations used in the article, and do not neglect to reiterate their "untrustworthiness." The quotation from Monteverde, near the beginning of the article, is from the *Memoirs of General Miller*, Vol. 2, London, 1829, p. 277-78, according to *MEW* (p.744, n.202) which adds: "In this book Bolivar's motives for the imprisonment of Miranda are onesidedly presented. Bolivar was, to judge from his reply to Monteverde, really convinced that Miranda had committed treason." Further on, the quotation from Hurtado Mendoza is taken from Ducoudray-Holstein's *Memoirs of Simon Bolivar*, Vol. 1, London, 1830, p. 170-71. (*MEW*, p.744, n.203.) The quotation from an "eyewitness" which appears about midway through the article is taken from the same work, Vol. 2. (Ibid., n.206.)

However, the indictment of Marx's interpretation of Bolivar which is offered by his Communist editors is only partly acceptable in terms of modern research; the side which cannot be confirmed is the political side. It is true there are many factual errors in the article, and it cannot be followed in its complete refusal to grant Bolivar any positive qualities of personal character and ability. But modern scholarship only strengthens the case for Marx's attack on Bolivar's authoritarianism and Bonapartist propensities, as can be seen from Gerhard Masur's *Simon Bolivar* (Univ. of New Mexico Press, 1948) and also (if we consider his massive documentation in spite of his pro-Spanish viewpoint) Salvador de Madariaga's *Bolívar* (New York & London, 1952).

Furthermore, the Communist editors' key statement that "Naturally Marx had at that time no other sources at his disposal than the books of the authors mentioned, whose bias was then only little Inown," is easily disproved. We know that, in working on the *NAC* articles, Marx went through all the encyclopedias--French, German and English-language. In the major encyclopedias of the U.S., England, France and Germany that lay before him, the articles on Bolivar varied only from very favorable to eulogistic. At most, an article may mention "suspicions" of dictatorial tendencies, in passing. All those we have checked end with panegyrics. In two cases that discuss their sources, the *Encyclopaedia Americana* (1849) warns the reader against Ducoudray-Holstein, and the British *Penny Encyclopaedia* (1836) warns against both Ducoudray-Holstein and Hippisley. None of them reflects the hostility of the ex-legionnaires. The picture presented by the encyclopedias is clear and onesided but in the direction opposite to that claimed in *MEW*. It was Marx's article in the *NAC* that was out of step when it appeared. Even aside from Bolivar's general authoritarianism, other questions raised by the Communist editors (such as Bolivar's betrayal of Miranda) have by no means been settled by modern scholarship, being at least as controversial now as they were then.

One of Marx's mistakes is not caught by the Communist editors at all: the name of the subject is given wrongly as "Bolivar y Ponte." Obviously Marx did not understand the structure of the Spanish surname, or took this mistake over from Ducoudray-Holstein. Bolívar y Ponte was the name of the subject's father, but his own (to give it all the accents) was Simón Bolívar y Palacios. *MEW*, Vol. 29, repeats Marx's mistake in its name index.

It is interesting to report that when an anti-Madariaga *jehad* broke out in South America after the publication of the Spanish historian's image-breaking study of Bolivar, one of the leading cultists in the Caracas school of Bolivarian hagiography, Angel Francisco Brice, published a pamphlet entitled *El "Bolívar" de Marx Ampliado por Madariaga* (Caracas, 1952). As the title indicates, Brice tries to make an amalgam of Marx's and Madariaga's point of view, which are poles apart. A few years later Brice published another pamphlet, *Bolívar Visto por Carlos Marx* (Caracas, 1961), which has no trouble finding biographical errors in Marx's account, none of them bearing on the basic political interpretation. It would appear from this last publication by Brice that a pamphlet containing Marx's article in Spanish, entitled *Simón Bolívar*, had been published somewhere (the good scholar does not reveal where or by whom) with a foreword which says that Marx wrote it for the *Encyclopaedia Britannica*! As a result of Brice's 1952 booklet, M. A. Osorio Jiménez included a section on Marx's article in his *Bibliografía Crítica de la Detracción Bolivariana*, quoting Brice.

"BORODINO"

In his letter accompanying the manuscript of this article, Engels wrote to Marx, 28 January 1858: "'Borodino' could not be made shorter, unfortunately, since up to now the battle has been represented altogether wrongly."

However, the Soviet line in history objects to Engels' representation. In part this is a continuation of the difference in view over the role of the Russian general Kutusoff which was discussed (above) under "Barclay de Tolly." *MEW* (p. 746-47, n.221) criticizes Engels as follows:

"In the article 'Borodino' Engels gives a clear presentation of the grandeur of this mighty battle, of the stubbornness and steadfast resolution shown by both of the contending armies in the battle, and sketches a considerably more objective picture of the course of the battle than authors of many Western European works on military history. Nevertheless we must establish some inaccuracies in the elucidation of various sides of this event. An essential influence on Engels' standpoint was, in this connection, the book of the German historian Bernhardi on General Toll which he lists at the end of the essay, and which contains a whole series of tendentious assertions, stemming from Toll himself as well as his biographers. The inaccuracies in Engels' essay concern mainly the judgment of the results of the battle, which Engels was inclined to see as a victory for the Napoleonic army, and also the role of the commander-in-chief of the Russian army, M. I. Kutusoff, in this battle. The position selected by Kutusoff and the arrangement of the Russian troops was not at all incorrect, as the article says it was. The mostly vulnerable left flank of the Russians had a reliable support by a considerable force of reserves, which had been placed there by Kutusoff and were cleverly used by him in the course of the battle. This indeed explains Napoleon's forced renunciation of turning the Russian left flank and the shifting of the direction of his main blow more to the center of the Russian position. Kutusoff did not remain passive in the battle, but constantly influenced its progress, by parrying and frustrating Napoleon's designs, as is especially clearly shown by the Russian cavalry's thrust in the rear of the French left flank, a successful movement carried through on his orders. The over-all result of the battle was thoroughly unfavorable for Napoleon. He did not understand he had to destroy the main forces of the Russian army, and thereby he suffered enormous damage. The battle disclosed not only the capacity of the Russian troops for steadfast defense but also their ability to deal annihilating blows. Its outcome prepared the turn in the course of the war in favor of Russia and the defeat of the Napoleonic army by the Russian army, in spite of the forced surrender of Moscow which was expedient under the given circumstances.

"Later research also produces materially more data on the numerical relation of forces and the amount of casualties suffered by both armies. According to these data, the French disposed of over 135,000 men and 587 cannon during the battle, and the Russians over 120,000 men and 640 cannon; the losses of the French amounted to 58,000 dead and wounded, while the Russians lost about 40,000 men."

"BOSQUET"

From *MEW* (p.731, n.129):

"The first part of this contribution, as shown by the extant preparatory material stems from Marx; the last part, however, which deals with the part taken by Bosquet in the Crimean war (1853-56), was written by Engels (see his letter to Marx of 22 September 1857)."

Engels' letter of 22 September 1857 was written in response to Marx's request of 17 September for something on Bosquet's military conduct in the Crimea:

"*Bosquet*. At the Alma he executed the flanking attack by the French right wing against the Russian left wing with an energy and rapidity to which the Russians have given recognition, and brought even artillery up to the plateau through pathless ravines considered impracticable. He would have merited great praise here were it not that he faced an opponent much weaker numerically. — At Balaklava he was quickly at hand to disengage the English right wing, so that the rest of the English light cavalry could withdraw under the protection of his troops, and the Russians lost their desire to push forward. At Inkermann he was already prepared early in the morning to intervene with three batallions and 2 batteries, but, having been refused, he proceeded to place three brigades as a reserve behind the English right wing (on the Tchornaia slope) and moved into battle with two brigades about eleven o'clock, upon which the Russians beat a retreat. The English had engaged all their troops, the Russians still had 16 batallions at their disposal, and without Bosquet the English would have been lost. The 16 intact Russian batallions covered the retreat. In this case pursuit was not very possible; the plateau ends 3000 paces from the battlefield. On every occasion Bosquet had therefore shown himself to be prompt, vigilant, active, in short a model commander, as he had also done during the whole time he led the covering troops on the Tchornaia slope. One cannot say much on whether or not he would have answered as commanding general in chief; he had many qualities, and anyone who is an excellent vanguard general, as he was, has to prove himself almost only as a *strategician*, for which there was no great opportunity in the whole Sebastopol campaign."

As in the case of the spelling of Bennigsen's name, there is no editorial notice taken in *MEW* of the fact that the *NAC* article gives Bosquet's first names as Marie Joseph, isntead of Pierre Joseph François. The *MEW* translation of the text follows the *NAC* in giving the name as Marie Joseph, but the personal-name index gives the correct data. Since I have been unable to find any authority for "Marie Joseph" in any reference work, before or after the *NAC*, the source of the mistake must remain speculative.

"BRIDGE, MILITARY"

From *MEW* (p.734, n.150):

"From Engels' letter to Marx of 18 September 1857 it can be seen that Marx was involved in the assemblage of material for this article and sent Engels a number of extracts from encyclopedias on military bridges."

An extract from Engels' letter to Marx of 11 or 12 September 1857 provides a typical example of the cooperation between the two men:

"Can you find out what *Bockbrücken (ponts à chevalets)* are called in English? Also a description of the Austrian Birago-type pontoons would be desirable, and a short excerpt--only a hint--on the nature of pontoons in the various armies (see Sir Howard Douglas, *Military Bridges*); whether the Russians and the Prussians still have canvas pontoons. I have no material here [in Ryde], and what I have in Manchester is very old. I have a bit on English pontoons..."

If Marx did inform him that *Bockbrücken* are trestle bridges, the term did not get into the article, though the use of trestles is mentioned.

"BUGEAUD"

MEW (p.741, n.189) notes that Marx's essential sources included: Dr. Wagner's *The Tricolor on the Atlas; or, Algeria and the French Conquest* (London, Edin. & N.Y., 1854); D. Stern's *Histoire de la Révolution de 1848*, Vol. 1 (Paris, 1850). The note continues with a remark which ties up with the passage already quoted above under "Algeria":

"It is possible that Marx also used the details on Bugeaud's activity in Algeria which Engels cited in the first version of the essay 'Algeria' and which was eliminated by the encyclopedia's editors on publication. It also appears from Engels' letters to Marx of 17 and 22 September 1857 that Engels had a part in collecting the material for this essay."

In response to Marx's request of 17 September 1857 for a military summation of Bugeaud, Engels replied (22 September):

"*Bugeaud*. Most of it is already indicated in the article 'Algeria.' He was a middling general, whose victories in Algeria and Morocco did not have much significance. That he conquered Algeria with 100,000 men, adapted military strategy there to the nature of the country and the enemy, and broke or rather suppressed the capacity for resistance of the Arabs (not the Kabyles)--these do not entitle him to my high estimation, for I do not believe that he made the plans. He was a bit of a swashbuckler and proved on the Tafna that he was not only venal but that he was also indecisive when in a difficult position. With 100,000 men and with lieutenants like Lamoicière, Changarnier, Cavaignac, Négrier, Duvivier, developed in the course of a ten-year war, he could do something of a job without having great ability, especially since the French general staff is *very good*; besides, his own activity was limited mainly just to the disposition (where it is not known what the staff did *for him*) and command of the reserve, since only individual divisions and brigades acted in any one spot."

The allusion to the Tafna is to the Treaty on the Tafna between Bugeaud and Abd el Kader, the Algerian rebel leader, signed 30 May 1857 in the neighborhood of the Tafna River. The article on Bugeaud included a passage on the secret bribe which he accepted.

"BURMAH"

Engels found the writing of this article dull and burdensome. On 11 February 1858 he complained: "I have not got far enough with the pieces I have started--'Burmah,' etc.--to think of being able to finish them this evening on time. The 'Burmah' is a very disagreeable job--long books to read through, and yet nothing really serious to make of it, as it must be pretty short." And again on 18 February: "'Burmah' is a very laborious article." On 24 February he reported: "half done--the information on the last war is wearisome to ferret out." On 4 March: "I had finished 'Burmah' when I had to make various necessary additions from another source. Since it is not yet finished, the garbage will have to wait till Tuesday." But on 15 March, Marx finally received it in the mail.

"CARABINE"

The last sentence in the *NAC* article, not included in the article as given in this book, was added to Engels' article in New York, as follows: "Several improvements in breech-loading carabines have recently been made in the United States, and submitted for trial to an ordnance board at West Point." (*MEW*, p.746, n.216.)

"FORTIFICATION"

To Engels' article the editors appended a long table listing U.S. forts, preceded by the sentence: "The following statement exhibits the fortifications of the United States now existing or in course of construction (Oct. 1859), and the amount expended for their construction, modification and repair:" (Omitted from this book.) (*MEW*, p.753-54, n.258.)

"NAVY"

The last section of this article, beginning after a dash with the words "The origin of the navy of the United States..."--to be found in the second column of the next-to-last page of the article as it appears in this book--is omitted from *MEW*. A note (p.756, n.272) explains:

"At the end of this article, the editors of the *NAC* appended a section reporting the development of the U.S. Navy since the year 1775.

This section contains data on the state of the American Navy up to the publication of Vol. 12 of the encyclopedia (1861), in which the article by Engels written some months previously was included."

The last statement is not altogether clear and seems to indicate that this section includes some of Engels' work; therefore I have let it stand as part of the text, though it cannot be ascribed to Engels in its present form.

6
Notes on the Appendices

On Appendix I
THE FIVE DUBIOSA

There are at least five articles which were definitely sent to the New York *NAC* office by Marx but which were not published, or published in so revised or summary a form as to be unrecognizable. The *NAC* texts of these articles are given in Appendix I.

"ABENSBERG"

This was included by Engels in his 28 May 1857 list of contemplated subjects; in his letter to Marx of 11 July 1857, it was among those promised "positively for Friday." *MEW* (p.717, n.50) states:

"To one of the stages in the battle of Regensburg—the battle of Abensberg—Engels devoted his article 'Abensberg,' which he wrote at about the same time as his essay 'Aspern' and which was published in 1858 in Volume 1 of the *NAC*. The brevity of this article leaves one to surmise that the original text was considerably shortened by the editors of the Cyclopaedia." [Vol. 14, p.717, n.50.]

The note then includes a translation of the article.

"BROWN, SIR GEORGE"

It is surprising that *MEW* makes no statement anywhere on the disposition of this article. Yet the Marx-Engels correspondence is quite clear in its references to it. On 17 September 1857, Marx lists it as one of Engels' jobs. On 21 Septembe he reminds Engels about it: "Finally, on Sir *G. Brown*, about whom I know nothing. Not necessary to have much on the man." On the 23rd he writes again, "Is there anything at all to say about that ass *Sir G. Brown*?" Finally, in his retrospective letter of 1 February 1858 (quoted in Section 4 above), Marx lists the B articles originally requested by Dana, including "Brown (Sir George)," and adds: "The ass [Dana] has received all of these."

It is possible, therefore, that the short article on Brown which appears in the *NAC* should be added to the 67 articles presently in the canon.

"BÜLOW"

On 1 February 1858 Marx wrote to Engels that Dana had presented a new list of B subjects, including "Bülow, Later that month (18th and 22nd) the two discussed who was to do what par of the essay. On the 24th Engels wrote that

"with regard to 'Bülow' I am in a dilemma, since I absolutely do not know where to find any good book on the War of Liberation. His resolute spirit at Grossbeeren must be acknowledged (he struck at the French against Bernadotte's will), and the Dennewitz victory is very noteworthy: 40,000 Prussians beat 70,000 Frenchmen. I will look around some more meanwhile."

In subsequent letters Engels referred to the task of working up the subject as a bit of "unpleasantness" and as "giving me indigestion." Finally Marx wrote on 19 March 1858: "Drop 'Bülow,' on which I have enough *for an ordinary biog-*

raphy (short one), in case searching for material holds you up any longer..."

The editors of *MEW* explain (Vol. 29, p.691, n.254):

"The article 'Bülow' has not been included [among the 67 of the canon] ... because its original text is not available. From the preparatory material for this work which has been preserved, it can be concluded that the article was changed by the editors of the *NAC* to the point of being unrecognizable."

In another note (Vol. 14, p.707, n.1) saying much the same thing, they put it: "...one can conclude that the article was severely shortened by the editors of the encyclopedia and changed to the point of being unrecognizable." However, Marx's remark in his letter of 19 March 1858 may be considered to cast some doubt on this reasoning.

"CARTOUCH"

Besides the mention of this article already quoted in Section 3, *MEW* (p.746, n.219) introduces a translation of the short *NAC* article as follows: "At the same time as the article 'Case Shot,' Engels wrote a short definition for the next subject word 'Cartouch.' Following is the text of the published explanation in Vol. 4 of the *NAC*, evidently shortened." The source of this information is not given.

"FULMINATES" or "CAPS (PERCUSSION)"

The references in the Marx-Engels correspondence are all to "Percussion Caps"; the term "Fulminates" is not mentioned there. On 7 January 1858 Engels, writing about the list of C articles he was working on, says that it will be difficult to find material on two, "Camp" and "Caps (percussion)."

"For Percussion Caps, the main thing is the history of the discovery of potassium chlorate and its explosiveness, as well as the dates of the introduction of percussion guns in the various armies. Both of these things would be desirable. If you could go to the British Museum some time at your convenience and hunt up something on them for me, these articles would soon be done; otherwise things will bog down—my libraries here have nothing on them."

On 30 January 1858 Engels queried, "How goes it with 'Camp,' 'Catapults' and 'Caps' (Percussion)?" On 1 February Marx reported that he had finished his part of "Catapult" and most of "Camp," adding:

"The piece on *Percussion Cap* is detailed, because of the very varied kinds of gun locks to enumerate. I would have finished with the crap already if the new order had not come from Dana in the meantime. I'm sending you the garbage all together."

But the last sentence would not seem to apply to the unfinished article on Percussion Caps. There is no further mention in the correspondence. *MEW* (Vol. 29, p.690, n.242) simply states, "This article was not published in the *NAC*."

It is true that there is no article in the *NAC* under "Cap [or Caps], Percussion," but under "Percussion Cap" (Vol. 13) there is a cross-reference: "See *Fulminates*." The article on "Fulminates" (Vol. 8) certainly does not encourage the idea that it is the article which is discussed in Marx and Engels' letters. It is not mainly on percussion caps in any case, and the references in the article are American in emphasis. There is only the possibility that an article submitted by Marx went into the making of the *NAC* version.

We may also note that the *V.I.KPSS* article has a sentence which reads: "Marx prepared the material for articles by Engels such as 'Camp,' 'Catapult,' 'Fulminates' [the Russian word used is *fulminaty*], 'Military Bridge,' for the article 'Army,' and others." This sounds as if the writers are identifying the *NAC* article on "Fulminates" with the article on "Percission Caps" which the Marx-Engels correspondence discusses.

On Appendix II

ENGELS' LIST OF 28 MAY 1857

In his letter of 28 May 1857, Engels set down a list of 23 article headings to be proposed to Dana. As mentioned in Section 4 above, where the list is reproduced, only seven of these headings were turned into articles published in the *NAC* and figuring among the 67 of the canon, as follows:

Adjutant
Afghanistan
Albuera
Algeria
Attack
Arquebuse
Aspern

Of the rest, three are represented by no separate heading in the *NAC*:

Advanced guard
Approaches
Axle (artillery)

Four more are accounted for as follows: "Abensberg" is discussed under Appendix I; "Augereau" under Appendix III. The article "Aboukir" is specifically mentioned by *MEW* and *V.I.KPSS* as having been proved not to be by Marx or Engels. As for the heading which Engels lists as "Antwerp (fortress and sieges)," it must be reported that the *NAC* article on Antwerp contains only two sentences on the fortifications and nothing on the sieges.

This leaves nine articles which are mentioned on Engels' list and actually exist as *NAC* entries. None of these is mentioned again in the Marx-Engels correspondence (nor by *MEW* or *V.I.KPSS*) with the exception of "Arbela," which had previously been brought up by Engels in his letter of 22 April 1857 as one example of an article on military history that might be written.

Clearly, then, there is no evidence that any of these nine articles were written by Marx or Engels and, in fact, it must be assumed that they were not. For information only, Appendix II presents the brief texts of these nine articles, as follows:

Acre, St. Jean d'
Actium
Aland Islands
Aldenhoven
Alessandria
Almeida
Amusette
Anglesey
Arbela

On Appendix III

THE THREE REJECTS

The three articles in Appendix III are those which were included in the first Russian edition of the Marx-Engels *Sochineniia*, and then eliminated from the second edition: "Augereau," "Austerlitz," and "Badajoz."

MEW gives no explanation for the change. *V.I.KPSS* explains the case of "Austerlitz" as follows: "the non-participation of Marx and Engels has been established by an examination of the records of the Cyclopaedia [presumably meaning the publisher Appleton]. It has been established that the author of the article 'Austerlitz' was G. Herbert, who wrote a number of articles on military subjects for the *NAC*."

Perhaps the other two cases were established in the same way.

However, the publication of these three articles in the first Russian edition gave them some currency. As we have already mentioned at the end of Section 1, "Badajoz" was one of the three articles reprinted in the Marx-Engels collection *Revolution in Spain*. For this reason, they are given in Appendix III.

It is not clear why these three articles were included in the canon in the first place. The Marx-Engels correspondence gives no more likely ground for including them than several others. "Augereau" merely figures in Engels' list of 28 May 1857 along with 22 others. In the same letter, "Austerlitz" is mentioned separately only as an example of a possible military topic, along with "Arbela"; and in Engels' letter of 21 September 1857, the section headed "Austerlitz" is clearly concerned with the article on Bernadotte. As for "Badajoz," it figures in the correspondence only in connection with Engels' boner in the article "Albuera."

On Appendix IV

THE AMERICAN CYCLOPAEDIA

("Second Edition")

Although the *New American Cyclopaedia* went through several printings, with different dates on the title-pages, the publishers, D. Appleton & Co., reserved the term "second edition" for the complete revision of the encyclopedia which started appearing in 1873 under a different and shorter title, the *American Cyclopaedia* (retaining the same subtitle), still edited by George Ripley and Charles A. Dana. The preface states: "Only such portions of the original matter have been retained as were found to be in accordance with the existing state of knowledge," and stresses that every page was newly type-set.

What was done with the Marx-Engels articles in this "second edition"?

Only nine of the articles remained essentially the same, including two of the longest, albeit in some of these cases light revision and updating or addition of new material took place.

In general, three kinds of things happened to the rest of the material where it was still used: (1) It was much condensed. (2) The amount of space devoted to military matters and military history, especially in the case of place names, was drastically reduced. (3) The tone of the revised articles, even where based on Marx-Engels passages, is much blander; expressions of opinion and judgment are often stricken.

The nine articles which remained essentially the same were:

Army
Bem
Blücher
Bourrienne
Bridge, Military
Captain
Case Shot
Cavalry
Coehorn

Twenty-four of the headings were eliminated completely. These were all specific military terms, with the one exception of the biographical "Airey."

Abatis
Airey
Arquebuse
Attack
Barbette
Bastion
Battery
Battle
Berme
Blindage
Bomb
Bomb Ketch
Bomb-proof
Bomb Vessel
Bombardier
Bombardment
Bonnet
Bridge-head
Camp
Campaign
Carabine
Carcass
Carronade
Cartridge

In eight cases the articles are virtually all new. In one case, "Infantry," the conception of the article is entirely different: where Engels' was largely an historical account, the new article is mainly a description of infantry organization in the chief countries at the time. These eight are:

Artillery
Ayacucho
Barclay de Tolly
Bidassoa
Bosquet
Burmah
Fortification
Infantry

In five cases the articles have been quite thoroughly revised:

Afghanistan
Algeria
Armada
Bernadotte
Brescia

In seven others, the revisions have been even more sweeping, though parts of the Marx-Engels articles are still visible:

Adjutant
Ammunition
Bayonet
Berthier
Bessières
Buda
Navy

In the following seven, the Marx-Engels articles have been sharply condensed as well as rewritten:

Bennigsen
Beresford
Blenheim
Blum
Bolivar
Brune
Bugeaud

And in the following five, the condensation has gone to the point of leaving merely a summary of a few lines or a paragraph:

Albuera
Alma
Aspern
Bomarsund
Borodino

The prefatory matter in Volume 1, harking back to the "First Edition, 1858-1863" which was called the *NAC*, gives a "List of Contributors" to that edition in which Marx's name is given as "Karl Marx, Ph.D., London, Eng." But the relatively short list of the "Corps of Contributors" to the new edition does not include Marx.

However, in this edition Marx has become a subject, an entry in the encyclopedia itself, as a result of the worldwide notoriety which he gained following the Paris Commune. The article on him, reproduced in Appendix IV, appeared in Volume 11, dated 1875, p. 216. The partial list of contributors included in this volume does not show who wrote it. Marx's name is also mentioned prominently in the article on the "International Association"--meaning the International Working Men's Association, i.e the First International--in Volume 9, written by N. L. Thieblin. There is passing mention of Marx in the long article on "Socialism" in Volume 15. The very long article on the "Commune de Paris," by Edward L. Burlingame, does not mention Marx. There is no mention of Engels in any of these articles.

The second article in Appendix IV is from the next in the series of Appleton encyclopedias, *Appletons' Annual Cyclopaedia*, a yearbook. Appearing in the volume for 1883 (New Series, Vol. 8; N.Y., D. Appleton & Co., 1884), it is in the obituary section, marking Marx's death. The volume gives no indication of the author of the article, which contains a number of factual inaccuracies.

Speculation on the possible authors of these two articles will inevitably include Dana himself.

HAL DRAPER

Marx & Engels

Articles in the N.A.C.

Abatis

ABATIS, or ABATTIS, in military strategy, a bulwark made of felled trees, in frequent use in rude mountain warfare. On emergency, the trees are laid lengthwise, with the branches pointed outwards to repel the invaders, while the trunks serve as a breastwork for the defendants. When the abatis is deliberately employed as the means of defending a mountain pass, for instance, the boughs of the tree are stripped of their leaves and pointed, the trunks are embedded in the ground, and the branches interwoven, so as to form a sort of *chevaux de frise.*

Adjutant

ADJUTANT, an assistant officer or aide-de-camp attached to commanders of larger or smaller bodies of troops. Generally every commander of a battalion of infantry, or of a regiment of cavalry has an adjutant; the chiefs of brigades, divisions, corps d'armée, and the commander-in-chief, have one or more as the importance of the command may require. The adjutant has to make known the commands of his chief, and to see to their execution, as well as to receive or collect the reports intended for his chief. He has, therefore, in his charge, to a great extent, the internal economy of his body of troops. He regulates the rotation of duty among its component parts, and gives out the daily orders; at the same time, he is a sort of clerk to his chief, carries on the correspondence with detachments and with the superior authorities, arranges the daily reports and returns into tabular form, and keeps the journal and statistical books of his body of troops. Larger bodies of troops now generally have a regular staff attached—taken from the general staff of the army, and under a "chief of the staff," who takes to himself the higher functions of adjutant, and leaves him merely the transmission of orders and the regulation of the internal routine duty of the corps. The arrangements in such cases, however, are so different in different armies, that it is impossible to give even a general view of them. In no two armies, for instance, are the functions of an adjutant to a general commanding a corps d'armée exactly alike. Beside these real adjutants, the requirements of monarchical institutions have created in almost all European states hosts of titular adjutants-general to the monarch, whose functions are imaginary, except when called upon to do duty with their master; and even then, these functions are of a purely formal kind.

Afghanistan

AFGHANISTAN, an extensive country of Asia, north-west of India. It lies between Persia and the Indies, and in the other direction between the Hindoo Koosh and the Indian Ocean. It formerly included the Persian provinces of Khorassan and Kohistan, together with Herat, Beloochistan, Cashmere, and Sinde, and a considerable part of the Punjaub. In its present limits there are probably not more than 4,000,000 inhabitants. The surface of Afghanistan is very irregular,—lofty table lands, vast mountains, deep valleys, and ravines. Like all mountainous tropical countries it presents every variety of climate. In the Hindoo Koosh, the snow lies all the year on the lofty summits, while in the valleys the thermometer ranges up to 130°. The heat is greater in the eastern than in the western parts, but the climate is generally cooler than that of India; and although the alternations of temperature between summer and winter, or day and night, are very great, the country is generally healthy. The principal diseases are fevers, catarrhs, and ophthalmia. Occasionally the small-pox is destructive. The soil is of exuberant fertility. Date palms flourish in the oases of the sandy wastes; the sugar cane and cotton in the warm valleys; and European fruits and vegetables grow luxuriantly on the hill-side terraces up to a level of 6,000 or 7,000 feet. The mountains are clothed with noble forests, which are frequented by bears, wolves, and foxes, while the lion, the leopard, and the tiger, are found in districts congenial to their habits. The animals useful to mankind are not wanting. There is a fine variety of sheep of the Persian or large-tailed breed. The horses are of good size and blood. The camel and ass are used as beasts of burthen, and goats, dogs, and cats, are to be found in great numbers. Beside the Hindoo Koosh, which is a continuation of the Himalayas, there is a mountain chain called the Solyman mountain, on the south-west; and between Afghanistan and Balkh, there is a chain known as the Paropamisan range, very little information concerning which has, however, reached Europe. The rivers are few in number; the Helmund and the Cabool are the most important. These take their rise in the Hindoo Koosh, the Cabool flowing east and falling into the Indus near Attock; the Helmund flowing west through the district of Seiestan and falling into the lake of Zurrah. The Helmund has the peculiarity of overflowing its banks annually like the Nile, bringing fertility to the soil, which, beyond the limit of the inundation, is sandy desert. The principal cities of Afghanistan are Cabool, the capital, Ghuznee, Peshawer, and Candahar. Cabool is a fine town, lat. 34° 10′ N. long. 60° 43′ E., on the river of the same name. The buildings are of wood, neat and commodious, and the town being surrounded with fine gardens, has a very pleasing aspect. It is environed with villages, and is in the midst of a large plain encircled with low hills. The tomb of the emperor Baber is its chief monument. Peshawer is a large city, with a population estimated at 100,000. Ghuznee, a city of ancient renown, once the capital of the great sultan Mahmoud, has fallen from its great estate and is now a poor place. Near it is Mahmoud's tomb. Candahar was founded as recently as 1754. It is on the site of an ancient city. It was for a few years the capital; but in 1774 the seat of government was removed to Cabool. It is believed to contain 100,000 inhabitants. Near the city is the tomb of Shah Ahmed, the founder of the city, an asylum so sacred that even the king may not remove a criminal who has taken refuge within its walls. The geographical position of Afghanistan, and the peculiar character of the people, invest the country with a political importance that can scarcely be over-estimated in the affairs of central Asia. The government is a monarchy, but the king's authority over his high-spirited and turbulent subjects, is personal and very uncertain. The kingdom is divided into provinces, each superintended by a representative of the sovereign, who collects the revenue and remits it to the capital. The Afghans are a brave, hardy, and independent race; they follow pastoral or agricultural occupations only, eschewing trade and commerce, which they contemptuously resign to Hindoos, and to other inhabitants of towns. With them, war is an excitement and relief from the monotonous occupation of industrial pursuits. The Afghans are divided into clans, over which the various chiefs exercise a sort of feudal supremacy. Their indomitable hatred of rule, and their love of individual independence, alone prevents their becoming a powerful nation; but this very irregularity and uncertainty of action makes them dangerous neighbors, liable to be blown about by the wind of caprice, or to be stirred up by political intriguers, who artfully excite their passions. The two principal tribes are the Dooranees and Ghiljies, who are always at feud with each other. The Dooranee is the more powerful; and in virtue of their supremacy their ameer or khan made himself king of Afghanistan. He has a revenue of about $10,000,000. His authority is supreme only in his tribe. The military contingents are chiefly furnished by the Dooranees; the rest of the army is supplied either by the other clans, or by military adventurers who enlist into the service in hopes of pay or plunder. Justice in the towns is administered by cadis, but the Afghans rarely resort to law. Their khans have the right of punishment even to the extent of life or death. Avenging of blood is a family duty; nevertheless, they are said to be a liberal and generous people when unprovoked, and the rights of hospitality are so sacred that a deadly enemy who eats bread and salt, obtained even by stratagem, is sacred from revenge, and may even claim the protection of his host against all other danger. In religion they are Mohammedans, and of the Soonee sect; but they are not bigoted, and alliances between Sheeahs and Soonees are by no means uncommon. Afghanistan has been subjected alternately to Mogul and Persian dominion. Previous to the advent of the British on the shores of India the foreign invasions which swept the plains of Hindostan always proceeded from Afghanistan. Sultan Mahmoud the Great, Genghis Khan, Tamerlane, and Nadir Shah, all took this road. In 1747 after the death of Nadir, Shah Ahmed, who had learned the art of war under that military adventurer, determined to shake off the Persian yoke. Under him Afghanistan reached its highest point of greatness and prosperity in modern times. He belonged to the family of the Suddosis, and his first act was to seize upon the booty which his late chief had gathered in India. In 1748 he succeeded in expelling the Mogul governor from Cabool and Peshawer, and crossing the Indus he rapidly overran the Punjaub. His kingdom extended from Khorassan to Delhi, and he even measured swords with the Mahratta powers. These great enterprises did not, however, prevent him from cultivating some of the arts of peace, and he was favorably known as a poet and historian. He died in 1772, and left his crown to his son Timour, who, however, was unequal to the weighty charge. He abandoned the city of Candahar, which had been founded by his father, and had, in a few years, become a wealthy and populous town, and removed the seat of government back to Cabool. During his reign the internal dissensions of the tribes, which had been repressed by the firm hand of Shah Ahmed, were revived. In 1793 Timour died, and Siman succeeded him. This prince conceived the idea of consolidating the Mohammedan power of India, and this plan, which might have seriously endangered the British possessions, was thought so important that Sir John Malcolm was sent to the frontier to keep the Afghans in check, in case of their making any movement, and at the same time negotiations were opened with Persia, by whose assistance the Afghans might be placed between two fires. These precautions were, however, unnecessary; Siman Shah was more than sufficiently occupied by conspiracies, and disturbances at home, and his great plans were nipped in the bud. The king's brother, Mohammed, threw himself into Herat with the design of erecting an independent principality, but failing in his attempt he fled into Persia. Siman Shah had been assisted in attaining the throne by the Bairukshee family, at the head of which was Sheir Afras Khan. Siman's appointment of an unpopular vizier excited the hatred of his old supporters, who organized a conspiracy which was discovered, and Sheir Afras was put to death. Mohammed was now recalled by the conspirators, Siman was taken prisoner and his eyes put out. In opposition to Mohammed, who was supported by the Doorances, Shah Soojah was put forward by the Ghilgies, and held the throne for some time; but he was at last defeated, chiefly through the treachery of his own supporters, and was forced to take refuge amongst the Sikhs. In 1809 Napoleon had sent Gen. Gardanne to Persia in the hope of inducing the shah to invade India, and the Indian government sent a representative to the court of Shah Soojah to create an opposition to Persia. At this epoch, Runjeet Singh rose into power and fame. He was a Sikh chieftain, and by his genius made his country independent of the Afghans, and erected a kingdom in the Punjaub, earning for himself the title of Maharajah (chief rajah), and the respect of the Anglo-Indian government. The usurper Mohammed was, however, not destined to enjoy his triumph long. Futteh Khan, his vizier, who had alternately fluctuated between Mohammed and Shah Soojah, as ambition or temporary interest prompted, was seized by the king's son Kamran, his eyes put out, and afterward cruelly put to death. The powerful family of the murdered vizier swore to avenge his death. The puppet Shah Soojah was again brought forward and Mohammed expelled. Shah Soojah having given offence, however, was presently deposed, and another brother crowned in his stead. Mohammed fled to Herat, of which he continued in possession, and in 1829 on his death his son Kamran succeeded him in the government of that district. The Bairukshee family, having now attained chief power, divided the territory among themselves, but following the national usage quarrelled, and were only united in presence of a common enemy. One of the brothers, Mohammed Khan, held the city of Peshawer, for which he paid tribute to Runjeet Singh; another held Ghuznee; a third Candahar; while in Cabool, Dost Mohammed, the most powerful of the family, held sway. To this prince, Capt. Alexander Burnes was sent as ambassador in 1835, when Russia and England were intriguing against each other in Persia and Central Asia. He offered an alliance which the Dost was but too eager to accept; but the Anglo-Indian government demanded every thing from him, while it offered absolutely nothing in return. In the mean time, in 1838, the Persians, with Russian aid and advice, laid siege to Herat, the key of Afghanistan and India; a Persian and a Russian agent arrived at Cabool, and the Dost, by the constant refusal of any positive engagement on the part of the British, was, at last, actually compelled to receive overtures from the other parties. Burnes left, and Lord Auckland, then governor-general of India, influenced by his secretary W. McNaghten, determined to punish Dost Mohammed, for what he himself had compelled him to do. He resolved to dethrone him, and to set up Shah Soojah, now a pensioner of the Indian government. A treaty was concluded with Shah Soojah, and with the Sikhs; the shah began collecting an army, paid and officered by the British, and an Anglo-Indian force was concentrated on the Sutlej. McNaghten, seconded by Burnes, was to accompany the expedition in the quality of envoy in Afghanistan. In the mean time the Persians had raised the siege of Herat, and thus the only valid reason for interference in Afghanistan was removed, but, nevertheless, in December 1838, the army marched toward Sinde, which country was coerced into submission, and the payment of a contribution for the benefit of the Sikhs and Shah Soojah. Feb. 20, 1839, the British army passed the Indus. It consisted of about 12,000 men, with above 40,000 camp-followers, beside the new levies of the shah. The Bolan pass was traversed in March; want of provisions and forage began to be felt; the camels dropped by hundreds, and a great part of the baggage was lost. April 7, the army entered the Kojuk pass, traversed it without resistance, and on April 25 entered Candahar, which the Afghan princes, brothers of Dost Mohammed, had abandoned. After a rest of two months, Sir John Keane, the commander, advanced with the main body of the army toward the north, leaving a brigade under Nott, in Candahar. Ghuznee, the impregnable stronghold of Afghanistan, was taken, July 22, a deserter having brought information that the Cabool gate was the only one which had not been walled up; it was accordingly blown down, and the place was then stormed. After this disaster, the army which Dost Mohammed had collected, at once disbanded, and Cabool too opened its gates, Aug. 6. Shah Soojah was installed in due form, but the real direction of government remained in the hands of McNaghten, who also paid all Shah Soojah's expenses out of the Indian treasury. The conquest of Afghanistan seemed accomplished, and a considerable portion of the troops was sent back. But the Afghans were noways content to be ruled by the *Feringhee Kafirs* (European infidels), and during the whole of 1840 and '41, insurrection followed on insurrection in every part of the country. The Anglo-Indian troops had to be constantly on the move. Yet, McNaghten declared this to be the normal state of Afghan society, and wrote home that every thing went on well, and Shah Soojah's power was taking root. In vain were the warnings of the military officers and the other political agents. Dost Mohammed had surrendered to the British in October, 1840, and was sent to India; every insurrection during the summer of '41 was successfully repressed, and toward October, McNaghten, nominated governor of Bombay, intended leaving with another body of troops for India. But then the storm broke out. The occupation of Afghanistan cost the Indian treasury £1,250,000 per annum: 16,000 troops, Anglo-Indian, and Shah Soojah's, had to be paid in Afghanistan; 3,000 more lay in Sinde, and the Bolan pass; Shah Soojah's regal splendors, the salaries of his functionaries, and all expenses of his court and government, were paid by the Indian treasury, and finally, the Afghan chiefs were subsidized, or rather bribed, from the same source, in order to keep them out of mischief. McNaghten was informed of the impossibility of going on at this rate of spending money. He attempted retrenchment, but the only possible way to enforce it was to cut down the allowances of the chiefs. The very day he attempted this, the chiefs formed a conspiracy for the extermination of the British, and thus McNaghten himself was the means of bringing about the concentration of those insurrectionary forces, which hitherto had struggled against the invaders singly, and without unity or concert; though it is certain, too, that by this time the hatred of British dominion among the Afghans had reached the highest point.—The English in Cabool were commanded by Gen. Elphinstone, a gouty, irresolute, completely helpless old man, whose orders constantly contradicted each other. The troops occupied a sort of fortified camp, which was so extensive that the garrison was scarcely sufficient to man the ramparts, much less to detach bodies to act in the field. The works were so imperfect that ditch and parapet could be ridden over on horseback. As if this was not enough, the camp was commanded almost within musket range by the neighboring heights, and to crown the absurdity of the arrangements, all provisions, and medical stores, were in two detached forts at some distance from camp, separated from it, moreover, by walled gardens and another small fort not occupied by the English. The citadel or Bala Hissar of Cabool would have offered strong and splendid winter quarters for the whole army, but to please Shah Soojah, it was not occupied. Nov. 2, 1841, the insurrection broke out. The house of Alexander Burnes, in the city, was attacked and he himself murdered. The British general did nothing, and the insurrection grew strong by impunity. Elphinstone, utterly helpless, at the mercy of all sorts of contradictory advice, very soon got every thing into that confusion which Napoleon described by the three words, *ordre*, *contreordre*, *désordre*. The Bala Hissar was, even now, not occupied. A few companies were sent against the thousands of insurgents, and of course were beaten. This still more emboldened the Afghans. Nov. 3, the forts close to the camp were occupied. On the 9th, the commissariat fort (garrisoned by only 80 men) was taken by the Afghans, and the British were thus reduced to starvation. On the 5th, Elphinstone already talked of buying a free passage out of the country. In fact, by the middle of November, his irresolution and incapacity had so demoralized the troops that neither Europeans nor Sepoys were any longer fit to meet the Afghans in the open field. Then the negotiations began. During these, McNaghten was murdered in a conference with Afghan chiefs. Snow began to cover the ground, provisions were scarce. At last, Jan. 1, a capitulation was concluded. All the money, £190,000, was to be handed over to the Afghans, and bills signed for £140,000 more. All the artillery and ammunition, except 6 six-pounders and 3 mountain guns, were to remain. All Afghanistan was to be evacuated. The chiefs, on the other hand, promised a safe conduct, provisions, and baggage cattle. Jan. 5, the British marched out, 4,500 combatants and 12,000 camp-followers. One march sufficed to dissolve the last remnant of order, and to mix up soldiers and camp-followers in one hopeless confusion, rendering all resistance impossible. The cold and snow and the want of provisions acted as in Napoleon's retreat from Moscow. But instead of Cossacks keeping a respectful distance, the British were harassed by infuriated Afghan marksmen, armed with long-range matchlocks, occupying every height. The chiefs who signed the capitulation neither could nor would restrain the mountain tribes. The Koord-Cabool pass became the grave of nearly all the army, and the small remnant, less than 200 Europeans, fell at the entrance of the Jugduluk pass. Only one man, Dr. Brydon, reached Jelalabad to tell the tale. Many officers, however, had been seized by the Afghans, and kept in captivity. Jelalabad was held by Sale's brigade. Capitulation was demanded of him, but he refused to evacuate the town, so did Nott at Candahar. Ghuznee had fallen; there was not a single man in the place that understood any thing about artillery, and the Sepoys of the garrison had succumbed to the climate. In the mean time, the British authorities on the frontier, at the first news of the disaster of Cabool, had concentrated at Peshawer the troops destined for the relief of the regiments in Afghanistan. But transportation was wanting and the Sepoys fell sick in great numbers. Gen. Pollock, in February, took the command, and by the end of March, 1842, received further reinforcements. He then forced the Khyber pass, and advanced to the relief of Sale at Jelalabad; here Sale had a few days before completely defeated the investing Afghan army. Lord Ellenborough, now governor-general of India, ordered the troops to fall back; but both Nott and Pollock found a welcome excuse in the want of transportation. At last, by the beginning of July, public opinion in India forced Lord Ellenborough to do something for the recovery of the national honor and the prestige of the British army; accordingly, he authorized an advance on Cabool, both from Candahar and Jelalabad. By the middle of August, Pollock and Nott had come to an understanding respecting their movements, and Aug. 20, Pollock moved towards Cabool, reached Gundamuck, and beat a body of Afghans on the 23d, carried the Jugduluk pass Sept. 8, defeated the assembled strength of the enemy on the 13th at Tezeen, and encamped on the 15th under the walls of Cabool. Nott, in the mean time, had, Aug. 7, evacuated Candahar, and marched with all his forces toward Ghuznee. After some minor engagements, he defeated a large body of Afghans, Aug 30, took possession of Ghuznee, which had been abandoned by the enemy, Sept. 6, destroyed the works and town, again defeated the Afghans in the strong position of Alydan, and, Sept. 17, arrived near Cabool, where Pollock at once established his communication with him. Shah Soojah had, long before, been murdered by some of the chiefs, and since then no regular government had existed in Afghanistan; nominally, Futteh Jung, his son, was king. Pollock despatched a body of cavalry after the Cabool prisoners, but these had succeeded in bribing their guard, and met him on the road. As a mark of vengeance, the bazaar of Cabool was destroyed, on which occasion the soldiers plundered part of the town and massacred many inhabitants. Oct. 12, the British left Cabool and marched by Jelalabad and Peshawer to India. Futteh Jung, despairing of his position, followed them. Dost Mohammed was now dismissed from captivity, and returned to his kingdom. Thus ended the attempt of the British to set up a prince of their own making in Afghanistan.

Airey

AIREY, Sir Richard, K. C. B., major-general, and, at present, quartermaster-general of the British army, entered the service in 1821 as ensign, was made a captain 1825, a lieutenant-colonel 1851, and as such took the command of a brigade in the army of the east in 1854. When the Crimean expedition was about to sail from Varna, he was made, Sept. 1854, quartermaster-general of the expeditionary force, and, as such, became one of the 6 or 8 officers who, under the command of Lord Raglan, have been charged with destroying the English army by dint of routine, ostensible fulfilment of duty, and want of common sense and energy. To Airey's share, fell the fixing of the proportions in which the different articles of camp-equipage, tents, great-coats, blankets, boots, should be dealt out to the various regiments. According to his own admission (before the Chelsea commission of inquiry), "there never was a period after the first week in Dec. 1854, when there was not at Balaklava a considerable supply of warm clothing, and at that very time there were regiments engaged at the front in the trenches, which were suffering acutely from the want of these very articles, which lay in readiness for them at a distance of 7 or 8 miles." This, he says, was not his fault; there never having been the slightest difficulty in getting his signature of approval to a requisition for such articles. On the contrary, he gives himself credit for having, as much as possible, abridged and simplified the routine process of approving, reducing, or disapproving the requisition sent to him by divisional and regimental officers.

Albuera

ALBUERA, a village and rivulet in the Spanish province of Estremadura, about 12 miles S. E. of Badajos. In the spring of 1811, the British laid siege to Badajos, then in the hands of the French, and were pressing the fortress very hard. Beresford, with about 10,000 British and Germans, and 20,000 Portuguese and Spanish troops, covered the siege at Albnera. Soult advanced with the disposable portion of the army of Andalusia, and attacked him May 16. The English right was posted on a rounded hill, from which a saddle-shaped prolongation extended along the centre and left. In front the position was covered by the Albuera river. Soult at once recognized this round hill as the commanding point and key of the position; he therefore merely occupied the centre and left, and prepared an attack *en masse* upon the English right. In spite of the protestation of his officers, Beresford had posted nearly all the English and German troops on the centre and left, so that the defence of the hill devolved almost exclusively upon Spanish levies. Accordingly, when Soult's infantry advanced in dense concentric columns up this hill, the Spaniards very soon gave way, and the whole British position was at once turned. At this decisive moment, after Beresford had several times refused to send British or German troops to the right, a subordinate staff officer, on his own responsibility, ordered the advance of some 7,000 English troops. They deployed on the back of the saddle-shaped height, crushed the first French battalions by their fire, and on arriving at the hill, found it occupied by a not very orderly mass of deep columns, without space to deploy. Upon these they advanced. The fire of their deployed line told with murderous effect on the dense masses; and when the British, finally, charged with the bayonet, the French fled in disorder down the hill. This supreme effort cost the British line four-fifths of their number very near in killed and wounded; but the battle was decided, and Soult retreated, though the siege of Badajos was raised a few days afterward.

Algeria

ALGERIA, a division of northern Africa, formerly the Turkish pashalic of Algiers, but since 1830 included in the foreign dominions of France. It is bounded N. by the Mediterranean, E. by Tunis, W. by Morocco, S. by the Great Sahara. The extreme length is 500 miles from E. to W.; the extreme breadth 200 miles from N. to S. The Atlas ridge constitutes an important physical feature in the country, and divides the arable land of the sea-board from the desert. It also constitutes the northern and southern watershed of the province. The main ridge runs from east to west, but the whole province is intersected in all directions with spurs from the central range. The loftiest of the western mountains is Mount Wanashrees, the Mons Zalacus of Ptolemy; of the eastern the Jurjura and Aurep. These attain a height of nearly 7,000 feet. The principal river is the Shelliff. There are rivers of considerable size also, which flow from the south side of the Atlas, and lose themselves in the desert. None of these rivers are navigable. They are nearly dried up in the summer, but overflow a considerable extent of country in the spring and fertilize the soil.—The climate is not considered unhealthy by some travellers. Ophthalmia and cutaneous diseases are common. It is said there are no endemic fevers, but the great loss of the French troops by disease may perhaps lead to a different conclusion. The atmosphere is pure and bright, the summer very hot; and in the winter severe weather is occasionally experienced, especially in the hill country. On the limits of the desert the soil is arid and sandy, but between the mountain districts it is fertile, and especially so in the neighborhood of the streams. Grain crops of all kinds, fruits, European and tropical; flowers, and particularly roses, of remarkable beauty; and a species of sugar-cane, said to be the largest and most productive of any known species, grow in Algeria. The domestic animals of every variety are numerous. Horses, of course, are excellent; asses are of fine growth and much used for riding. The camel and dromedary of Algeria are very superior. The merino sheep is indigenous, and Spain was first supplied from Algeria. The Numidian lion, the panther and leopard, ostriches, serpents, scorpions, and other venomous reptiles, are abundant.—The Berbers, Kabyles, or Mazidh, for they are known by the three names, are believed to have been the aboriginal inhabitants. Of their history as a race little is known, further than that they once occupied the whole of north-western Africa, and are to be found also on the eastern coast. The Kabyles live in the mountain district. The other inhabitants are Arabs, the descendants of the Mussulman invaders. Moors, Turks, Kouloughs, Jews, and negroes, and lastly the French, are found in the country. The population in 1852 was 2,078,035, of which 134,115 were Europeans of all nations, beside a military force of 100,000 men. The Kabyles are an industrious race, living in regular villages, excellent cultivators, and working in mines, in metals, and in coarse woollen and cotton factories. They make gunpowder and soap, gather honey and wax, and supply the towns with poultry, fruit, and other provisions. The Arabs follow the habits of their ancestors, leading a nomadic life, and shifting their camps from place to place according as the necessities of pasturage or other circumstances compel them. The Moors are probably the least respectable of the inhabitants. Living in the towns, and more luxurious than either the Arabs or Kabyles, they are, from the constant oppression of their Turkish rulers, a timid race, reserving nevertheless their cruelty and vindictiveness, while in moral character they stand very low.—The chief towns of Algeria are Algiers the capital, Constantine, population about 20,000, and Bona, a fortified town on the sea-coast, population about 10,000 in 1847. Near this are the coral fisheries, frequented by the fishers from France and Italy. Bougiah is on the gulf of the same name. The capture of this place was hastened by the outrages of the Kabyles in the neighborhood, who wrecked a French brig by cutting her cable and then plundered her and massacred the crew.—There are some remains of antiquity in the interior, especially in the province of Constantine, among others those of the ancient city of Lambessa; with remains of the city gates, parts of an amphitheatre, and a mausoleum supported by Corinthian pillars. On the coast is Coleah Cherchell, the ancient Julia Cæsarea, a place of some importance to the French. It was the residence of Juba, and in its neighborhood are ancient remains. Oran is a fortified town. It remained in possession of the Spaniards until 1792. Tlemcen, once the residence of Abd-el-Kader, is situated in a fertile country; the ancient city was destroyed by fire in 1670, and the modern town was almost destroyed by the French. It has manufactures of carpets and blankets. South of the Atlas is the Zaab, the ancient Gætulia. The chief place is Biscara; the Biscareens are a peaceful race, much liked in the northern ports as servants and porters.—Algeria has been successively conquered by the Roman, the Vandal, and the Arab. When the Moors were driven from Spain in 1492, Ferdinand sent an expedition against Algiers, and seizing on Oran, Bougiah, and Algiers, he threatened the subjugation of the country. Unable to cope with the powerful invader, Selim Outemi, the emir of the Metidjah, a fertile plain in the neighborhood of Algiers, asked assistance from the Turks, and the celebrated corsair, Barbarossa Horush, was sent to his assistance. Horush appeared in 1516, and having first made himself master of the country and slain Selim Outemi with his own hand, he attacked the Spaniards, and after a war of varying fortunes, was obliged to throw himself into Tlemcen, where a Spanish army besieged him, and having succeeded in capturing him, put him to death in 1518. His brother, Khair-ed-Deen, succeeded him, sought assistance from the sultan, Selim I., and acknowledged that prince as his sovereign. Selim accordingly appointed him pasha of Algiers, and sent him a body of troops with which he was able to repulse the Spaniards, and eventually to make himself master of the country. His exploits against the Christians in the Mediterranean gained him the dignity of capudan pasha from Solyman I. Charles V. made an attempt to reinstate the Spanish authority, and a powerful expedition of 370 vessels and 30,000 men crossed the Mediterranean in 1541. But a terrible storm and earthquake dispersed the fleet, and cut off all communication between it and the army. Without shelter, and exposed to the harassing attacks of a daring enemy, the troops were compelled to reëmbark, and make their escape with a loss of 8,000 men, 15 vessels of war, and 140 transports. From this time forward there were unceasing hostilities between the Barbary powers and the knights of Malta; thence sprang that system of piracy which made the Algerine corsairs so terrible in the Mediterranean, and which was so long submitted to by the Christian powers. The English under Blake, the French under Duquesne, the Dutch, and other powers, at various times attacked Algiers; and Duquesne having twice bombarded it, the dey sent for the French consul of Louis XIV., and having learned from him the cost of the bombardment, jeeringly told him that he would himself have burnt down the city for half the money.—The system of privateering was continued in spite of the constant opposition of the European powers; and even the shores of Spain and Italy were sometimes invaded by the desperadoes who carried on this terrible trade of war and plunder. Thousands of Christian slaves constantly languished in captivity in Algiers; and societies of pious men were formed, whose express object was to pass to and from Algiers annually for the purpose of ransoming the prisoners with the funds remitted to their care by relatives. Meanwhile, the authority of the Turkish government had been reduced to a name. The deys were elected by the janizaries, and had declared their independence of the Porte. The last Turkish pasha had been expelled by Dey Ibrahim in 1705; and the janizaries by tumultuous elections appointed new chiefs, whom in their mutinies they often murdered. The janizaries were recruited from the immigrants from Turkey, no native, though the son of a janizary by a woman of the country, being admitted into their ranks. The dey sent occasional presents to Constantinople as a token of his nominal allegiance; but all regular tribute was withdrawn, and the Turks, hampered by their constant struggles with Russia, were too weak to chastise the rebels of a distant province. It was reserved to the young republic of the United States to point the way to an abolition of the monstrous tyranny. During the wars of the French revolution and of Napoleon, the powerful fleets in the Mediterranean had protected commerce, and the Algerines had been compelled to a respite of their lawless exactions. On the renewal of peace, the Algerines commenced their depredations; and the Americans, who in 1795 had been compelled to follow the example of European nations, and to subsidize the dey for peace, now refused the tribute. In 1815, Commodore Decatur encountered an Algerine squadron, took a frigate and a brig, and sailed into the bay of Algiers, where he forced the dey to surrender all American prisoners, and to abandon all future claims for tribute. This bold example was followed by the English, who, under Lord Exmouth, bombarded the city in 1816, and reduced it to ashes, compelling the dey to surrender his prisoners. This was, however, only a punishment; for piracy was not suppressed, and in 1826 the Algerines openly seized Italian vessels in the Mediterranean, and even carried their incursions into the North sea. In 1818, Hussein Bey succeeded to the government; in 1823, the dwelling of the French consul having been plundered, and various outrages having been committed on vessels under the French flag, reparation was demanded without success. At last the dey of Algiers personally insulted the consul of France, and used expressions disrespectful to the king of France, who had not replied to a letter which the dey had written, in respect of a debt due by the French government to Jew merchants who were indebted to Hussein. To enforce an apology, a French squadron was sent, which blockaded Algiers. Negotiations were opened between France, Mehemet Ali, and the Porte, by which Mehemet Ali, with the assistance of France, undertook to conquer Algiers, and to pay a regular tribute to the sultan, of whom he would hold the government. This was broken off partly from the opposition of England, and partly because Mehemet Ali and France could not agree as to the precise arrangements by which the scheme was to be carried into effect. The government of Charles X. now undertook an expedition against Algiers single-handed, and on June 13, 1830, an army of 38,000 men, and 4,000 horses, disembarked before Algiers, under command of Gen. Bourmont. Hussein Dey had levied an army of 60,000 to oppose them, but having allowed them to land, he could make no effective resistance; and Algiers capitulated July 4, on condition that persons' private property and the religion of the country should be respected, and that the dey and his Turks should retire. The French took possession of the city. Among the spoil, they took 12 ships of war, 1,500 bronze cannon, and nearly $10,000,000 in specie. They immediately garrisoned Algiers, and established a military regency. The government of Charles X. had intended to surrender Algiers to the sultan, and instructions to that effect were actually on their way to Constantinople, when the events of July, 1830, deposed Charles X. One of the first acts of his successor was to decide on retaining the conquest, and Clausel was sent over as general-in-chief in place of Bourmont. From the first occupation of Algeria by the French to the present time, the unhappy country has been the arena of unceasing bloodshed, rapine, and violence. Each town, large and small, has been conquered in detail at an immense sacrifice of life. The Arab and Kabyle tribes, to whom independence is precious, and hatred of foreign domination a principle dearer than life itself, have been crushed and broken by the terrible razzias in which dwellings and property are burnt and destroyed, standing crops cut down, and the miserable wretches who remain massacred, or subjected to all the horrors of lust and brutality. This barbarous system of warfare has been persisted in by the French against all the dictates of humanity, civilization, and Christianity. It is alleged in extenuation, that the Kabyles are ferocious, addicted to murder, torturing their prisoners, and that with savages lenity is a mistake. The policy of a civilized government resorting to the *lex talionis* may well be doubted. And judging of the tree by its fruits, after an expenditure of probably $100,000,000, and a sacrifice of hundreds of thousands of lives, all that can be said of Algeria is that it is a school of war for French generals and soldiers, in which all the French officers who won laurels in the Crimean war received their military training and education. As an attempt at colonization, the numbers of Europeans compared with the natives show its present almost total failure; and this in one of the most fertile countries of the world, the ancient granary of Italy, within 20 hours of France, where security of life and property alike from military friends and savage enemies alone are wanted. Whether the failure is attributable to an inherent defect in the French character, which unfits them for emigration, or to injudicious local administration, it is not within our province to discuss. Every important town, Constantine, Bona, Bougiah, Arzew, Mortaganem, Tlemcen, was carried by storm with all the accompanying horrors. The natives submitted with an ill grace to their Turkish rulers, who had at least the merit of being co-religionists; but they found no advantage in the so-called civilization of the new government, against which, beside, they had all the repugnance of religious fanaticism. Each governor came but to renew the severities of his predecessor; proclamations announced the most gracious intentions, but the army of occupation, the military movements, the terrible cruelties practised on both sides, all refuted the professions of peace and good-will. In 1881, Baron Pichon had been appointed civil intendant, and he endeavored to organize a system of civil administration which should move with the military government, but the check which his measures would have placed on the governor-in-chief offended Savary, duc de Rovigo, Napoleon's ancient minister of police, and on his representation Pichon was recalled. Under Savary, Algeria was made the exile of all those whose political or social misconduct had brought them under the lash of the law; and a foreign legion, the soldiers of which were forbidden to enter the cities, was introduced into Algeria. In 1883, a petition was presented to the chamber of deputies, stating, "for 8 years we have suffered every possible act of injustice. Whenever complaints are preferred to the authorities, they are only answered by new atrocities, particularly directed against those by whom the complaints were brought forward. On that account no one dares to move, for which reason there are no signatures to this petition. O my lords, we beseech you in the name of humanity, to relieve us from this crushing tyranny: to ransom us from the bonds of slavery. If the land is to be under martial law, if there is to be no civil power, we are undone; there will never be peace for us." This petition led to a commission of inquiry, the consequence of which was the establishment of a civil administration. After the death of Savary, under the ad interim rule of Gen. Voirol, some measures had been commenced calculated to allay the irritation; the draining of swamps, the improvement of the roads, the organization of a native militia. This, however, was abandoned on the return of Marshal Clausel, under whom a first and most unfortunate expedition against Constantine was undertaken. His government was so unsatisfactory, that a petition praying inquiry into its abuses, signed by 54 leading persons connected with the province, was forwarded to Paris in 1836. This led eventually to Clausel's resignation. The whole of Louis Philippe's reign was occupied in attempts at colonization, which only resulted in land-jobbing operations; in military colonization, which was useless, as the cultivators were not safe away from the guns of their own block-houses; in attempts to settle the eastern part of Algeria, and to drive out Abd-el-Kader from Oran and the west. The fall of that restless and intrepid chieftain so far pacified the country, that the great tribe of the Hamianes Garabas sent in their submission at once. On the revolution of 1848, Gen. Cavaignac was appointed to supersede the Duke d'Aumale in the governorship of the province, and he and the Prince de Joinville, who was also in Algeria, then retired. But the republic did not seem more fortunate than the monarchy in the administration of this province. Several governors succeeded each other during its brief existence. Colonists were sent out to till the lands, but they died off, or quitted in disgust. In 1849, Gen. Pelissier marched against several tribes, and the villages of the Beni Sillem; their crops and all accessible property were burnt and destroyed as usual, because they refused tribute. In Zaab, a fertile district on the edge of the desert, great excitement having arisen in consequence of the preaching of a marabout, an expedition was despatched against them 1,200 strong, which they succeeded in defeating; and it was found that the revolt was wide-spread, and fomented by secret associations called the Sidi Abderrahman, whose principal object was the extirpation of the French. The rebels were not put down until an expedition under Generals Canrobert and Herbillon had been sent against them; and the siege of Zoatcha, an Arab town, proved that the natives had neither lost courage nor contracted affection for their invaders. The town resisted the efforts of the besiegers for 51 days, and was taken by storm at last. Little Kabylia did not give in its surrender till 1851, when Gen. St. Arnaud subdued it, and thereby established a line of communication between Philippeville and Constantine. The French bulletins and French papers abound in statements of the peace and prosperity of Algeria. These are, however, a tribute to national vanity. The country is even now as unsettled in the interior as ever. The French supremacy is perfectly illusory, except on the coast and near the towns. The tribes still assert their independence and detestation of the French regime, and the atrocious system of razzias has not been abandoned; for in the year 1857 a successful razzia was made by Marshal Randon on the villages and dwelling-places of the hitherto unsubdued Kabyles, in order to add their territory to the French dominions. The natives are still ruled with a rod of iron, and continual outbreaks show the uncertain tenure of the French occupation, and the hollowness of peace maintained by such means. Indeed, a trial which took place at Oran in August, 1857, in which Captain Doineau, the head of the *Bureau Arabe*, was proved guilty of murdering a prominent and wealthy native, revealed a habitual exercise of the most cruel and despotic power on the part of the French officials, even of subordinate rank, which justly attracted the attention of the world. At present, the government is divided into the three provinces of Constantine on the east, Algiers in the centre, and Oran in the west. The country is under the control of a governor-general, who is also commander-in-chief, assisted by a secretary and civil intendant, and a council composed of the director of the interior, the naval commandant, the military intendant, and attorney-general, whose business is to confirm the acts of the governor. The *conseil des contentieux* at Algiers takes cognizance of civil and criminal offences. The provinces where a civil administration has been organized have mayors, justices, and commissioners of police. The native tribes living under the Mohammedan religion still have their cadis: but between them a system of arbitration has been established, which they are said to prefer, and an officer (*l'avocat des Arabes*) is specially charged with the duty of defending Arab interests before the French tribunals.—Since the French occupation, it is stated that commerce has considerably increased. The imports are valued at about $22,000,000, the exports, $3,000,000. The imports are cotton, woollen, and silk goods, grain and flour, lime, and refined sugar; the exports are rough coral, skins, wheat, oil, and wool, with other small matters.

Alma

ALMA, a small river in the Crimea, running from the high ground in the neighborhood of Bakhtchisarai in a westerly direction, and emptying its waters into Kalamita bay, between Eupatoria and Sebastopol. The southern bank of this river, which rises very steep toward its mouth, and everywhere commands the opposite shore, was selected during the late Russo-Turkish war by Prince Mentchikoff as a defensive position in which to receive the onset of the allied armies just landed in the Crimea.—The forces under his command comprised 42 battalions, 16 squadrons, 100 Cossacks, and 96 guns, in all 35,000 men. The allies landed on Sept. 14, 1854, a little north of the Alma, 28,000 French (4 divisions), 28,000 English (five infantry and one cavalry division), and 6,000 Turks. Their artillery was exactly as numerous as that of the Russians, viz.: 72 French and 24 English guns. The Russian position was of considerable apparent strength, but in reality offered many weak points. Its front extended nearly 5 miles, far too great a distance for the small number of troops at Mentchikoff's disposal. The right wing was completely unsupported, while the left (on account of the allied fleets, the fire from which commanded the coast) could not occupy the position as far as the sea, and therefore labored under the same defect. The plan of the allies was founded on these facts. The front of the Russians was to be occupied by false attacks, while the French, under the cover of the 5 fleets, were to turn the Russian left, and the English, under the cover of their cavalry, to turn their right.—On the 20th the attack took place. It was to be made at daybreak, but owing to the slow movements of the English, the French could not venture to advance across the river before that time. On the French extreme right, Bosquet's division passed the river, which was almost everywhere fordable, and climbed the steep banks of the southern shore without finding any resistance. Means were also found, by vigorous effort, to bring 12 guns up to the plateau. To the left of Bosquet, Canrobert brought his division across the river, and began to deploy on the high ground, while Prince Napoleon's division was engaged in clearing the gardens, vineyards, and houses of the village of Alma from the Russian skirmishers. To all these attacks, made with 29 battalions, Mentchikoff opposed in his first and second lines only 9 battalions, in support of which 7 more soon arrived. These 16 battalions, supported by 40 guns and 4 squadrons of hussars, had to bear the brunt of the immensely superior attack of the French, who were soon supported by the remaining 9 battalions of Forey's division. Thus all St. Arnaud's troops were engaged, with the exception of the Turks, who remained in reserve. The result could not long be doubtful. The Russians slowly gave way, and retired in as good order as could be expected. In the mean time the English had commenced their attack. About 4 o'clock the fire of Bosquet's guns from the height of the plateau at the left of the Russian position had shown the battle to be seriously engaged; in about an hour the English skirmishing line engaged that of the Russians. The English had given up the plan of turning the Russian right, since the Russian cavalry, twice as strong, without Cossacks, as that of the British, covered that wing so as even to menace the English left. Accordingly, Lord Raglan determined to attack the Russians straight before him. He fell upon their centre, having in his first line Brown's light division and Evans' division; the two divisions of the duke of Cambridge and Gen. England formed the second line, while the reserve (Cathcart's division), supported by the cavalry, followed behind the left wing. The first line deployed and charged two villages before its front, and after dislodging the Russians, passed the Alma. Here the reports vary. The English distinctly maintain that their light division reached the breastwork behind which the Russians had placed their heavy artillery, but were then repulsed. The Russians declare that the light division never got well across the river, much less up the steep on which this breastwork was placed. At all events, the second line marched close behind, deployed, had to fall into column again to pass the Alma and to climb up the heights; deployed again, and after several volleys, charged. It was the duke of Cambridge's division (guards and Highlanders) especially, which came to the rescue of the light division. Evans, though slow in his advance, was not repelled, so that England's division in his rear could scarcely give him any support. The breastwork was taken by the guards and Highlanders, and the position was, after a short but violent struggle, abandoned by the Russians. Eighteen Russian battalions were here engaged against the same number of English battalions; and if the English battalions were stronger than the Russian by some 50 men each, the Russians amply made up for this by their superiority in artillery and the strength of the position. The English infantry fire, however, which is generally reputed as very murderous, was especially so on this occasion. Most of the troops engaged were armed with the Minié rifle, and the impact of their bullets, killing whole files at once, was most destructive to the deep Russian columns. The Russians, having all their infantry, except 6 battalions, engaged, and no hope to stem the advancing tide, broke off the battle, the cavalry and light artillery, together with the small infantry reserve, covering the retreat, which was not molested. The English fought decidedly better than any other troops in this battle, but in their habitual clumsy way of manœuvring, deploying, forming columns, and deploying again, unnecessarily, under the enemy's fire, by which both time and lives were lost. The consequence of this battle was to the allies the undisputed possession of the open country of the Crimea as long as the Russians remained without reinforcements, and the opening of the road to Sebastopol. By the first advantage they did not profit, but of the second they availed themselves without delay.

Ammunition

AMMUNITION, comprises the projectiles, charges, and articles used for priming, required for the use of fire-arms, and, as the word is generally understood, supposes these articles to be made up ready for use. Thus, small arm ammunition comprises cartridges and percussion caps (the latter, of course, are unnecessary where flint-locks or the needle-gun are in use); field-artillery ammunition is composed of shot, loaded shell, case shot, shrapnell, cartridges, priming tubes, matches, portfires, &c., with rockets for rocket-batteries. In fortresses and for sieges, the powder is generally kept in barrels, and made up in cartridges when required for use; so are the various compositions required during a siege; the hollow shot are also filled on the spot. The proportion of ammunition accompanying an army in the field varies according to circumstances. Generally an infantry soldier carries 60 rounds, seldom more; and a similar quantity per man accompanies the army in wagons, while a further supply follows with the park columns a march or two to the rear. For field-artillery, between 150 and 200 rounds per gun are always with the battery, partly in the gun-limber boxes, partly in separate wagons; another 200 rounds are generally with the ammunition-reserve of the army, and a third supply follows with the park columns. This is the rule in most civilized armies, and applies, of course, to the beginning of a campaign only; after a few months of campaigning, the ammunition-reserves are generally very severely drawn upon, perhaps lost after a disastrous battle, and their replacing is often difficult and slow.

Armada

ARMADA, Spanish, the great naval armament sent by King Philip II. of Spain, in 1588, for the conquest of England, in order thereby "to serve God, and to returne unto his church a great many contrite souls that are oppressed by the heretics, enemies to our holy Catholic faith, which have them subject to their sects, and unhappiness." (*Expedit. Hispan. in Angl. Vera Descriptio, A. D.* 1588.) The fullest account of this armament is given in a book published, about the time it set sail, by order of Philip, under the title *La Felicisima Armada quie el Rey Don Felipe nuestro Señor mando juntar en el Puerto de Lisboa* 1588. *Hecha por Pedro de Paz Salas.* A copy of this work was procured for Lord Burleigh, so that the English government was beforehand acquainted with every detail of the expedition. (This copy, containing notes up to March, 1588, is now in the British museum.) The fleet is therein stated to have consisted of 65 galleons and large ships, 25 *urcas* of 300 to 700 tons, 19 tenders of 70 to 100 tons, 13 small frigates, 4 galeasses and 4 galleys, in all 130 vessels, with a total tonnage of 75,868 tons. They were armed with 2,431 guns, of which 1,497 were of bronze, mostly full cannon (48 pdrs.), culverines (long 30 and 20 pdrs.), &c.; the ammunition consisted of 123,790 round shot and 5,175 cwt. of powder, giving about 50 rounds per gun, at an average charge of 4½ lbs. The ships were manned with 8,052 sailors, and carried 19,295 soldiers and 180 priests and monks. Mules, carts, &c., were on board to move the field artillery when landed. The whole was provisioned, according to the above authority, for 6 months. This fleet, unequalled in its time, was to proceed to the Flemish coast, where another army of 30,000 foot and 4,000 horse, under the duke of Parma, was to embark, under its protection, in flat-bottomed vessels constructed for the purpose, and manned by sailors brought from the Baltic. The whole were then to proceed to England. In that country Queen Elizabeth had, by vigorous exertions, increased her fleet of originally 30 ships, to some 180 vessels of various sizes, but generally inferior in that respect to those of the Spaniards. They were, however, manned by 17,500 sailors, and therefore possessed far more numerous crews than the Spanish fleet. The English military force was divided into two armies, one, of 18,500 men, under the earl of Leicester, for immediately opposing the enemy; the other, 45,000, for the defence of the queen's person. According to a MS. in the British museum, entitled "Details of the English Force Assembled to Oppose the Spanish Armada," (MS. Reg. 18th c. xxi.), 2,000 infantry were also expected from the Low Countries. The armada was to leave Lisbon in the beginning of May, but, owing to the death of the admiral Santa Cruz, and his vice-admiral, the departure was delayed. The duke of Medina Sidonia, a man totally unacquainted with naval matters, was now made captain-general of the fleet; his vice-admiral, Martinez de Ricalde, however, was an expert seaman. Having left Lisbon for Corunna for stores, May 29, 1588, the fleet was dispersed by a violent storm, and, though all the ships joined at Corunna with the exception of four, they were considerably shattered, and had to be repaired. Reports having reached England that the armament was completely disabled, the government ordered its own ships to be laid up; but Lord Howard, the admiral, opposed this order, set sail for Corunna, learned the truth, and, on his return, continued warlike preparations. Soon after, being informed that the armada had hove in sight, he weighed anchor and accompanied it on its way up the channel, harassing the Spanish ships whenever an opportunity presented itself. The Spaniards, in the mean time, proceeded to the coast of Flanders, keeping as close together as possible. In the various minor engagements which took place, the handier ships, more numerous crews, and better seamanship of the English, always gave them the victory over the clumsy and undermanned Spanish galleons, crowded as they were with soldiers. The Spanish artillery, too, was very badly served, and almost always planted too high. Off Calais the armada cast anchor, waiting for the duke of Parma's fleet to come out of the Flemish harbors; but it soon received word that his ships, being unfit for fighting, could not come out until the armada had passed the straits and driven off the Anglo-Dutch blockading squadron. It accordingly weighed again, but, when in sight of Dunkirk, was becalmed between the English fleet on one side and the Dutch on the other. Lord Howard prepared fire-ships, and when, during the night of Aug. 7, the breeze sprang up again, he sent 8 of them among the enemy. They produced a perfect panic in the Spanish fleet. Some ships weighed anchor, some cut their cables, drifting before the wind; the whole fleet got into confusion, several ships ran foul of each other and were disabled. By morning order was far from being restored, and the several divisions were scattered far and wide. Then Lord Howard, reinforced as he was by the ships equipped by the nobility and gentry, as also by the blockading squadron under Lord Byron, and ably seconded by Sir Francis Drake, engaged the enemy at 4 A. M. The battle, or rather chase (for the English were evidently superior on every point of attack), lasted till dark. The Spaniards fought bravely, but their unwieldy ships were unfit for the navigation of narrow waters, and for a moving fight. They were completely defeated, and suffered severe loss. The junction with the duke of Parma's transports having thus been foiled, a landing in England by the armada alone was out of the question. It was found that the greater part of the provisions on board had been consumed, and as access to Spanish Flanders was now impossible, nothing remained but to return to Spain to lay in fresh stores. (See "Certain Advertisements out of Ireland Concerning the Losses and Distresses Happened to the Spanish Navie on the Coast of Ireland," London, 1588—Examination of Emanuel Fremosa, who served in the San Juan, 1,100 tons, flag-ship of Admiral Ricalde). The passage through the channel being also closed by the English fleet, nothing remained but to round Scotland on their way home. The armada was but little harassed by the fleet of Lord Seymour sent in pursuit, as that fleet was badly supplied with ammunition and could not venture on an attack. But after the Spaniards had rounded the Orkneys dreadful storms arose and dispersed the whole fleet. Some ships were driven back as far as the coast of Norway, where they fell on the rocks; others foundered in the North sea, or struck on the rocks on the coast of Scotland or the Hebrides. Soon after, fresh storms overtook them on the west coast of Ireland, where above 30 vessels were lost. Those of the crews who escaped on shore were mostly killed; about 200 were executed by command of the lord deputy. Of the whole fleet not more than 60 vessels, and those in the most shattered condition, and with famine on board, reached Santander about the middle of September, when the plan of invading England was definitively given up.

Army

ARMY, the organized body of armed men which a state maintains for purposes of offensive or defensive war. Of the armies of ancient history the first of which we know any thing positive is that of Egypt. Its grand epoch of glory coincides with the reign of Rhamses II. (Sesostris), and the paintings and inscriptions relating to his exploits on the numerous monuments of his reign, form the principal source of our knowledge on Egyptian military matters. The warrior caste of Egypt was divided into two classes, *hermotybii* and *calasirii*, the first 160,000, the other 250,000 strong, in their best times. It appears that these two classes were distinguished from each other merely by age or length of service, so that the calasirii, after a certain number of years, passed into the hermotybii or reserve. The whole army was settled in a sort of military colonies, an ample extent of land being set apart for each man as an equivalent for his services. These colonies were mostly situated in the lower part of the country, where attacks from the neighboring Asiatic states were to be anticipated; a few colonies only were established on the upper Nile, the Ethiopians not being very formidable opponents. The strength of the army lay in its infantry, and particularly in its archers. Beside these latter there were bodies of foot soldiers, variously armed and distributed into battalions, according to their arms; spearmen, swordsmen, clubmen, slingers, &c. The infantry was supported by numerous war-chariots, each manned by 2 men, one to drive and the other to use the bow. Cavalry does not figure on the monuments. One solitary drawing of a man on horseback is considered to belong to the Roman epoch, and it appears certain that the use of the horse for riding and of cavalry became known to the Egyptians through their Asiatic neighbors only. That at a later period they had a numerous cavalry, acting, like all cavalry in ancient times, on the wings of the infantry, is certain from the unanimity of the ancient historians on this point. The defensive armor of the Egyptians consisted of shields, helmets, and breastplates, or coats-of-mail, of various materials. Their mode of attacking a fortified position shows many of the means and artifices known to the Greeks and Romans. They had the *testudo*, or battering-ram, the *vinea*, and scaling-ladder; that they, however, also knew the use of movable towers, and that they undermined walls, as Sir G. Wilkinson maintains, is a mere supposition. From the time of Psammeticus a corps of Grecian mercenaries was maintained; they were also colonized in lower Egypt.—Assyria furnishes us with the earliest specimen of those Asiatic armies which, for above 1,000 years, struggled for the possession of the countries between the Mediterranean and the Indus. There, as in Egypt, the monuments are our principal source of information. The infantry appear armed similar to the Egyptian, though the bow seems less prominent, and the arms offensive and defensive are generally of better make and more tasteful appearance. There is, beside, more variety of armament, on account of the greater extent of the empire. Spear, bow, sword, and dagger, are the principal weapons. Assyrians in the army of Xerxes are also represented with iron-mounted clubs. The defensive armament consisted of a helmet (often very tastefully worked), a coat of mail of felt or leather, and a shield. The war-chariots still formed an important portion of the army; it had 2 occupants, and the driver had to shelter the bowman with his shield. Many of those who fight in chariots are represented in long coats-of-mail. Then there was the cavalry, which here we meet with for the first time. In the earliest sculptures the rider mounts the bare back of his horse; later on, a sort of pad is introduced, and in one sculpture a high saddle is depicted, similar to that now in use in the East. The cavalry can scarcely have been very different from that of the Persians and later eastern nations—light, irregular horse, attacking in disorderly swarms, easily repelled by a well-armed, solid infantry, but formidable to a disordered or beaten army. Accordingly, it figured in rank behind the charioteers, who appear to have formed the aristocratic arm of the service. In infantry tactics some progress toward regular movements and formations in ranks and files appears to have been made. The bowmen either fought in advance, where they were always covered, each of them, by a shield-bearer, or they formed the rear rank, the first and second ranks, armed with spears, stooping or kneeling to enable them to shoot. In sieges they certainly knew the use of movable towers and mining; and, from a passage in Ezekiel, it would almost appear that they made some sort of mound or artificial hill to command the walls of the town—a rude beginning of the Roman *agger*. Their movable and fixed towers, too, were elevated to the height of the besieged wall, and higher, so as to command it. The ram and vinea they used also; and, numerous as their armies were, they turned off whole arms of rivers into new beds in order to gain access to a weak front of the attacked place, or to use the dry bed of the river as a road into the fortress. The Babylonians seem to have had armies similar to those of the Assyrians, but special details are wanting.—The Persian empire owed its greatness to its founders, the warlike nomads of the present Farsistan, a nation of horsemen, with whom cavalry took at once that predominant rank which it has since held in all eastern armies, up to the recent introduction of modern European drill. Darius Hystaspes established a standing army, in order to keep the conquered provinces in subjection, as well as to prevent the frequent revolts of the satraps, or civil governors. Every province thus had its garrison, under a separate commander; fortified towns, beside, were occupied by detachments. The provinces had to bear the expense of maintaining these troops. To this standing army also belonged the guards of the king, 10,000 chosen infantry (the Immortals, *Athanatoi*), resplendent with gold, followed on the march by long trains of carriages, with their harems and servants, and of camels with provisions, beside 1,000 halberdiers, 1,000 horse guards, and numerous war-chariots, some of them armed with scythes. For expeditions of magnitude this armament was considered insufficient, and a general levy from all the provinces of the empire took place. The mass of these various contingents formed a truly oriental army, composed of the most heterogeneous parts, varying among themselves in armament and mode of fighting, and accompanied by immense trains of baggage and innumerable camp-followers. It is to the presence of these latter that we must ascribe the enormous numbers of the Persian armies as estimated by the Greeks. The soldiers, according to their respective nationality, were armed with bows, javelins, spears, swords, clubs, daggers, slings, &c. The contingent of every province had its separate commander; they appear, from Herodotus, to have been divided by tens, hundreds, thousands, &c., with officers to command each decimal subdivision. The commands of large corps or of the wings of the army were generally given to members of the royal family. Among the infantry the Persian and the other Aryan nations (Medes and Bactrians) formed the *élite*. They were armed with bows, spears of moderate size, and a short sword; the head was protected by a sort of turban, the body by a coat covered with iron scales; the shield was mostly of wicker-work. Yet this *élite*, as well as the rest of the Persian infantry, was miserably beaten whenever it was opposed to even the smallest bodies of Greeks, and its unwieldy and disorderly crowds appear quite incapable of any but passive resistance against the incipient phalanx of Sparta and Athens; witness Marathon, Platæa, Mycale, and Thermopylæ. The war-chariots, which in the Persian army appear for the last time in history, might be useful on quite level ground against such a motley crowd as the Persian infantry themselves were, but against a solid mass of pikemen, such as the Greeks formed, or against light troops taking advantage of inequalities of ground, they were worse than useless. The least obstacle stopped them. In battle the horses got frightened, and, no longer under command, ran down their own infantry. As to the cavalry, the earlier periods of the empire give us little proof of its excellence. There were 10,000 horse on the plain of Marathon—a good cavalry country—yet they could not break the Athenian ranks. In later times it distinguished itself at the Granicus, where, formed in one line, it fell on the heads of the Macedonian columns as they emerged from the fords of the river, and upset them before they could deploy. It thus successfully opposed Alexander's advanced guard, under Ptolemy, for a long while, until the main body arrived and the light troops manœuvred on its flanks, when, having no second line or reserve, it had to retire. But at this period the Persian army had been strengthened by the infusion of a Greek element, imported by the Greek mercenaries, who, soon after Xerxes, were taken into pay by the king; and the cavalry tactics displayed by Memnon on the Granicus are so thoroughly un-Asiatic that we may, in the absence of positive information, at once ascribe them to Greek influence.—The armies of Greece are the first of the detailed organization of which we have ample and certain information. With them the history of tactics, especially infantry tactics, may be said to begin. Without stopping to give an account of the warlike system of the heroic age of Greece, as described in Homer, when cavalry was unknown, when the nobility and chiefs fought in war-chariots, or descended from them for a duel with an equally prominent enemy, and when the infantry appears to have been little better than that of the Asiatics, we at once pass to the military force of Athens in the time of her greatness. In Athens every free born man was liable to military service. The holders of certain public offices alone, and, in the earlier times, the fourth or poorest class of freemen, were exempt. It was a militia system based upon slavery. Every youth on attaining his 18th year was obliged to do duty for 2 years, especially in watching the frontiers. During this time his military education was completed; afterward he remained liable to service up to his 60th year. In case of war the assembled citizens fixed the number of men to be called out; in extreme cases only the *levées en masse* (*panstratia*) were resorted to. The *strategi*, 10 of whom were annually elected by the people, had to levy these troops and to organize them, so that the men of each tribe, or *phyle*, formed a body under a separate *phylarch*. These officers, as well as the *taxiarchs*, or captains of companies, were equally elected by the people. The whole of this levy formed the heavy infantry (*hoplitæ*) destined for the phalanx or deep line formation of spearmen, which originally formed the whole of the armed force, and subsequently, after the addition of light troops and cavalry, remained its mainstay—the corps which decided the battle. The phalanx was formed in various degrees of depth; we find mentioned phalanxes of 8, 12, 25 deep. The armature of the hoplitæ consisted of a breastplate or corslet, helmet, oval target, spear, and short sword. The *forte* of the Athenian phalanx was attack; its charge was renowned for its furious impetus, especially after Miltiades, at Marathon, had introduced the quickening of the pace during the charge, so that they came down on the enemy with a run. On the defensive, the more solid and closer phalanx of Sparta was its superior. While at Marathon the whole force of the Athenians consisted of a heavy armed phalanx of 10,000 hoplitæ, at Platæa they had, beside 8,000 hoplitæ, an equal number of light infantry. The tremendous pressure of the Persian invasions necessitated an extension of the liability to service; the poorest class, that of the thetes, was enrolled. They were formed into light troops (*gymnetæ*, *psili*); they had no defensive armor at all, or a target only, and were supplied with a spear and javelins. With the extension of the Athenian power, their light troops were reinforced by the contingents of their allies, and even by mercenary troops. Acarnanians, Ætolians, and Cretans, celebrated as archers and slingers, were added. An intermediate class of troops, between them and the hoplitæ, was formed, the *peltastæ*, armed similar to the light infantry, but capable of occupying and maintaining a position. They were, however, of but little importance until after the Peloponnesian war, when Iphicrates reorganized them. The light troops of the Athenians enjoyed a high reputation for intelligence and quickness both in resolution and in execution. On several occasions, probably in difficult ground, they even successfully opposed the Spartan phalanx. The Athenian cavalry was introduced at a time when the republic was already rich and powerful. The mountainous ground of Attica was unfavorable to this arm, but the neighborhood of Thessaly and Bœotia, countries rich in horses, and consequently the first to form cavalry, soon caused its introduction in the other states of Greece. The Athenian cavalry, first 300, then 600, and even 1,000 strong, was composed of the richest citizens, and formed a standing corps even in time of peace. They were a very effective body, extremely watchful, intelligent, and enterprising. Their position in battle, as well as that of the light troops, was generally on the wings of the phalanx. In later times, the Athenians also maintained a corps of 200 mercenary mounted archers (*hippotoxotæ*). The Athenian soldier, up to the time of Pericles, received no pay. Afterward 2 oboli (beside 2 more for provisions, which the soldier had to find) were given, and sometimes even the hoplitæ received as much as 2 drachms. Officers received double pay, cavalry soldiers three-fold, generals four-fold. The corps of heavy cavalry alone cost 40 talents ($40,000) per annum in time of peace, during war considerably more. The order of battle and mode of fighting were extremely simple; the phalanx formed the centre, the men locking their spears, and covering the whole front with their row of shields. They attacked the hostile phalanx in a parallel front. When the first onset was not sufficient to break the enemy's order, the struggle hand to hand with the sword decided the battle. In the mean time the light troops and cavalry either attacked the corresponding troops of the enemy, or attempted to operate on the flank and rear of the phalanx, and to take advantage of any disorder manifesting itself in it. In case of a victory they undertook the pursuit, in case of defeat they covered the retreat as much as possible. They were also used for reconnoitring expeditions and forays, they harassed the enemy on the march, especially when he had to pass a defile, and they tried to capture his convoys and stragglers. Thus the order of battle was extremely simple; the phalanx always operated as a whole; its subdivisions into smaller bodies had no technical significance; their commanders had no other task than to see that the order of the phalanx was not broken, or at least quickly restored. What the strength of Athenian armies was during the Persian wars, we have shown above by a few examples. At the beginning of the Peloponnesian war, the force mustered 13,000 hoplitæ for field service, 61,000 (the youngest and the oldest soldiers) for garrison duty, 1,200 horsemen, and 1,600 archers. According to Boeckh's calculations the force sent against Syracuse numbered 38,560 men; reinforcements despatched afterward, 26,000 men; in all nearly 65,000 men. After the complete ruin of this expedition, indeed, Athens was as much exhausted as France after the Russian campaign of 1812.—Sparta was the military state, *par excellence*, of Greece. If the general gymnastic education of the Athenians developed the agility as much as the strength of the body, the Spartans directed their attention mostly to strength, endurance, and hardiness. They valued steadiness in the ranks, and military point of honor, more than intelligence. The Athenian was educated as if he was to fight among light troops, yet in war he was fitted into his fixed place in the heavy phalanx; the Spartan, on the contrary, was brought up for service in the phalanx, and nothing else. It is evident that as long as the phalanx decided the battle, the Spartan, in the long run, had the best of it. In Sparta, every freeman was enrolled in the army lists from his 20th to his 60th year. The *ephori* determined the number to be called out, which was generally chosen among the middle-aged men, from 30 to 40. As in Athens, the men belonging to the same tribe or locality were enrolled in the same body of troops. The organization of the army was based upon the confraternities (*enomotiæ*) introduced by Lycurgus, 2 of which formed a pentecostys; 2 of these were united into a lochos, and 8 or 4 lochi into a mora. This was the organization in Xenophon's time; in former periods it appears to have varied. The strength of a mora is variously stated at from 400 to 900 men, and their number at one time was said to be 600. These various bodies of free Spartans formed the phalanx; the hoplitæ forming it were armed with a spear, a short sword, and a shield fastened round the neck. Later on, Cleomenes introduced the large Carian shield, fastened by a string on the left arm, and leaving both hands of the soldier free. The Spartans considered it disgraceful for their men to return, after a defeat, without their shields; the preservation of the shield proved the retreat to have been made in good order and a compact phalanx, while single fugitives, running for their lives, of course had to throw away the clumsy shield. The Spartan phalanx was generally 8 deep, but sometimes the depth was doubled by placing one wing behind the other. The men appear to have marched in step; some elementary evolutions were also in use, such as changing front to the rear by the half-turn of each man, advancing or retiring a wing by wheeling, &c., but they would seem to have been introduced at a later period only. In their best times, the Spartan phalanx, like that of Athens, knew the parallel front attack only. The ranks, on the march, were distant from each other 6 feet, in the charge 3 feet, and in a position receiving the charge, only 1½ foot, from rank to rank. The army was commanded by one of the kings, who, with his suite (*damosia*), occupied a position in the centre of the phalanx. Afterward, the number of the free Spartans having considerably decreased, the strength of the phalanx was kept up by a selection from the subjected *Periœci*. The cavalry was never stronger than about 600 men, divided into troops (*ulami*) of 50 men. It merely covered the wings. There was, beside, a body of 300 mounted men, the *élite* of the Spartan youth, but they dismounted in battle, and formed a sort of body-guard of hoplitæ around the king. Of light troops, there were the *skiritæ*, inhabitants of the mountains near Arcadia, who generally covered the left wing; the hoplitæ of the phalanx, beside, had Helot servants, who were expected in battle to do duty as skirmishers; thus, the 5,000 hoplitæ at Platæa brought 35,000 Helot light troops with them, but of the exploits of these latter we find nothing stated in history.—The simple tactics of the Greeks underwent considerable changes after the Peloponnesian war. At the battle of Leuctra, Epaminondas had to oppose, with a small force of Thebans, the far more numerous, and hitherto invincible Spartan phalanx. The plain, parallel front attack, here, would have been equivalent to certain defeat, both wings being outflanked by the longer front of the enemy. Epaminondas, instead of advancing in line, formed his army into a deep column, and advanced against one wing of the Spartan phalanx, where the king had taken his station. He succeeded in breaking through the Spartan line at this, the decisive point; he then wheeled his troops round, and moving on either hand, he himself outflanked the broken line, which could not form a new front without losing its tactical order. At the battle of Mantinea, the Spartans formed their phalanx with a greater depth, but, nevertheless, the Theban column again broke through it. Agesilaus in Sparta, Timotheus, Iphicrates, Chabrias in Athens, also introduced changes in infantry tactics. Iphicrates improved the *peltastæ*, a sort of light infantry, capable, however, in case of need, to fight in line. They were armed with a small round target, strong linen corslet, and long spear of wood. Chabrias made the first ranks of the phalanx, when on the defensive, kneel down to receive the enemy's charge. Full squares, and other columns, &c., were introduced, and accordingly deployments formed part of the elementary tactics. At the same time, greater attention was paid to light infantry of all kinds; several species of arms were borrowed from the barbarous and semi-barbarous neighbors of the Greeks, such as archers, mounted and on foot, slingers, &c. The majority of the soldiers of this period consisted of mercenaries. The wealthy citizens, instead of doing duty themselves, found it more convenient to pay for a substitute. The character of the phalanx, as the preëminently national portion of the army, in which the free citizens of the state only were admitted, thus suffered from this admixture of mercenaries, who had no right of citizenship. Toward the approach of the Macedonian epoch, Greece and her colonies were as much a mart for soldiers of fortune, and mercenaries, as Switzerland in the 18th and 19th centuries. The Egyptian kings had at an early time formed a corps of Greek troops. Afterward, the Persian king gave his army some steadiness by the admission of a body of Greek mercenaries. The chiefs of these bodies were regular condottieri, as much as those of Italy in the 16th century. During this period, warlike engines for throwing stones, darts, and incendiary projectiles, were introduced, especially by the Athenians. Pericles already used some similar machines at the siege of Samos. Sieges were carried on by forming a line of contravallation, with ditch, or parapet, round the place, investing it, and by the attempt to place the war-engines in a commanding position near the walls. Mining was regularly made use of, to bring the walls down. At the assault, the column formed the *synaspismus*, the outer ranks holding their shields before them, and the inner ranks holding them over their heads, so as to form a roof (called by the Romans, *testudo*), against the projectiles of the enemy.—While Greek skill was thus mainly directed toward shaping the flexible material of the mercenary bands into all sorts of novel and artificial formations, and in adopting or inventing new species of light troops, to the detriment of the ancient Doric heavy phalanx, which at that time alone could decide battles, a monarchy grew up, which, adopting all real improvements, formed a body of heavy infantry of such colossal dimensions, that no army with which it came in contact could resist its shock. Philip of Macedon formed a standing army of about 30,000 infantry, and 3,000 cavalry. The main body of the army was an immense phalanx of some 16,000 or 18,000 men, formed upon the principle of the Spartan phalanx, but improved in armament. The small Grecian shield was replaced by the large oblong Carian buckler, and the moderately sized spear by the Macedonian pike (*sarissa*) of 24 feet in length. The depth of this phalanx varied, under Philip, from 8, to 10, 12, 24 men. With the tremendous length of the pikes, each of the 6 front ranks could, on levelling them, make the points project in front of the first rank. The regular advance of such a long front of from 1,000 to 2,000 men, presupposes a great perfection of elementary drill, which in consequence was continually practised. Alexander completed this organization. His phalanx was, normally, 16,384 men strong, or 1,024 in front by 16 deep. The file of 16 (*lochos*) was conducted by a lochagos, who stood in the front rank. Two files formed a dilochy, 2 of which made a tetrarchy, 2 of which a taxiarchy, 2 of which a xenagy or syntagma, 16 men in front by 16 deep. This was the evolutionary unity, the march being made in columns of xenagies, 16 in front. Sixteen xenagies (equal to 8 pentecosiarchies, or 4 chiliarchies, or 2 telarchies) formed a small phalanx, 2 of which a diphalangarchy, and 4 a tetraphalangarchy or phalanx properly so called. Every one of these subdivisions had its corresponding officer. The diphalangarchy of the right wing was called head, that of the left wing, tail, or rear. Whenever extraordinary solidity was required, the left wing took station behind the right, forming 512 men in front by 32 in depth. On the other hand, by deploying the 8 rear ranks on the left of the front ranks, the extent of front could be doubled, and the depth reduced to 8. The distances of ranks and files were similar to those of the Spartans, but the close order was so compact that the single soldier in the middle of the phalanx could not turn. Intervals between the subdivisions of the phalanx were not allowed in battle; the whole formed one continuous line, charging *en muraille*. The phalanx was formed by Macedonian volunteers exclusively; though, after the conquest of Greece, Greeks also could enter it. The soldiers were all heavy armed hoplitæ. Beside shield and pike, they carried a helmet and sword, although the hand-to-hand fight with the latter weapon cannot very often have been required after the charge of that forest of pikes. When the phalanx had to meet the Roman legion, the case indeed was different. The whole phalangite system, from the earliest Doric times down to the breaking up of the Macedonian empire, suffered from one great inconvenience; it wanted flexibility. Unless on a level and open plain, these long, deep lines, could not move with order and regularity. Every obstacle in front forced it to form column, in which shape it was not prepared to act. Moreover, it had no second line or reserve. As soon, therefore, as it was met by an army, formed in smaller bodies and adapted to turn obstacles of ground without breaking line, and disposed in several lines seconding each other, the phalanx could not help going into broken ground, where its new opponent completely cut it up. But to such opponents as Alexander had at Arbela, his 2 large phalanxes must have appeared invincible. Beside this heavy infantry of the line, Alexander had a guard of 6,000 hyraspistæ, still more heavily armed, with even larger bucklers and longer pikes. His light infantry consisted of argyraspides, with small silver-plated shields, and of numerous peltastæ, both of which troops were organized in demi-phalanxes of normally 8,192 men, being able to fight either in extended order or in line, like the hoplitæ; and their phalanx often had the same success. The Macedonian cavalry was composed of young Macedonian and Thessalian noblemen, with the addition, subsequently, of a body of horsemen from Greece proper. They were divided into squadrons (*ilæ*), of which the Macedonian nobility alone formed 8. They belonged to what we should call heavy cavalry; they wore a helmet, cuirass with cuissarts of iron scales to protect the leg, and were armed with a long sword and pike. The horse, too, wore a frontlet of iron. This class of cavalry, the cataphracti, received great attention both from Philip and Alexander; the latter used it for his decisive manœuvre at Arbela, when he first beat and pursued one wing of the Persians, and then, passing behind their centre, fell upon the rear of the other wing. They charged in various formations: in line, in common rectangular column, in rhomboid or wedge-shaped column. The light cavalry had no defensive armor; it carried javelins and light short lances; there was also a corps of acrobalistæ, or mounted archers. These troops served for outpost duty, patrols, reconnoitring, and irregular warfare generally. They were the contingents of Thracian and Illyrian tribes, which, beside, furnished some few thousands of irregular infantry. A new arm, invented by Alexander, claims our attention from the circumstance that it has been imitated in modern times, the dimachæ, mounted troops, expected to fight either as cavalry or as infantry. The dragoons of the 16th and following centuries are a complete counterpart to these, as we shall see hereafter. We have, however, no information as to whether these hybrid troops of antiquity were more successful in their double task than the modern dragoons. Thus was composed the army with which Alexander conquered the country between the Mediterranean, the Oxus, and the Sutledj. As to its strength, at Arbela, it consisted of 2 large phalanxes of hoplitæ (say 30,000 men), 2 semi-phalanxes of peltastæ (16,000), 4,000 cavalry, and 6,000 irregular troops, in all about 56,000 men. At the Granicus, his force of all arms was 35,000 men, of whom 5,000 were cavalry.—Of the Carthaginian army we know no details; even the strength of the force with which Hannibal passed the Alps, is disputed. The armies of the successors of Alexander show no improvements on his formations; the introduction of elephants was but of short duration; when terrified by fire, these animals were more formidable to their own troops than to the enemy. The later Greek armies (under the Achæan league) were formed partly on the Macedonian, partly on the Roman system.—The Roman army presents us with the most perfect system of infantry tactics invented during the time when the use of gunpowder was unknown. It maintains the predominance of heavy infantry and compact bodies, but adds to it mobility of the separate smaller bodies, the possibility of fighting in broken ground, the disposition of several lines one behind the other, partly as supports and reliefs, partly as a powerful reserve, and finally a system of training the single soldier which was even more to the purpose than that of Sparta. The Romans, accordingly, overthrew every armament opposed to them, the Macedonian phalanx as well as the Numidian horse.—In Rome every citizen, from his 17th to his 45th or 50th year, was liable to serve, unless he belonged to the lowest class, or had served in 20 campaigns on foot, or 10 campaigns as a horseman. Generally the younger men only were selected. The drill of the soldier was very severe, and calculated to develop his bodily powers in every imaginable way. Running, jumping, vaulting, climbing, wrestling, swimming, first naked, then in full armament, were largely practised, beside the regular drill in the use of the arms and the various movements. Long marches in heavy marching order, every soldier carrying from 40 to 60 lbs., were kept up at the rate of 4 miles an hour. The use of the intrenching tools, and the throwing up of intrenched camps in a short time, also formed part of the military education; and not only the recruits, but even the legions of veterans, had to undergo all these exercises in order to keep their bodies fresh and supple, and to remain inured to fatigue and want. Such soldiers were, indeed, fit to conquer the world. —In the best times of the republic there were generally 2 consular armies, each consisting of 2 legions and the contingents of the allies (in infantry of equal strength, cavalry double the strength of the Romans). The levy of the troops was made in a general assembly of the citizens on the capitol or Campus Martius; an equal number of men was taken from every tribe, which was again equally subdivided among the 4 legions, until the number was completed. Very often citizens, freed from service by age or their numerous campaigns, entered again as volunteers. The recruits were then sworn in and dismissed until required. When called in, the youngest and poorest were taken for the velites, the next in age and means for the hastati and principes, the oldest and wealthiest for the triarii. Every legion counted 1,200 velites, 1,200 hastati, 1,200 principes, 600 triarii, and 300 horsemen (knights), in all 4,500. The hastati, principes, and triarii, were each divided into 10 manipuli or companies, and an equal number of velites attached to each. The velites (*rorarii*, *accensi*, *ferentarii*) formed the light infantry of the legion, and stood on its wings along with the cavalry. The hastati formed the 1st, the principes the 2d line; they were originally armed with spears. The triarii formed the reserve, and were armed with the pilum, a short but extremely heavy and dangerous spear, which they threw into the front ranks of the enemy immediately before engaging him sword in hand. Every manipulus was commanded by a centurion, having a 2d centurion for his lieutenant. The centurions ranked through the whole of the legion, from the 2d centurion of the last or 10th manipulus of the hastati to the 1st centurion of the 1st manipulus of the triarii (*primus pilus*), who, in the absence of a superior officer, even took the command of the whole legion. Commonly, the primus pilus commanded all the triarii, the same as the primus princeps (1st centurion of 1st manipulus of principes), all the principes and the primus hastatus, and all the hastati of the legion. The legion was commanded in the earlier times in turns by its 6 military tribunes; each of them held the command for 2 months. After the 1st civil war, legates were placed as standing chiefs at the head of every legion; the tribunes now were mostly officers intrusted with the staff or administrative business. The difference of armament of the 3 lines had disappeared before the time of Marius. The pilum had been given to all 3 lines of the legion; it now was the national arm of the Romans. The qualitative distinction between the 3 lines, as far as it was based upon age and length of service, soon disappeared too. In the battle of Mitellus against Jugurtha, there appeared, according to Sallust, for the last time hastati, principes, triarii. Marius now formed out of the 30 manipuli of the legion 10 cohorts, and disposed them in 2 lines of 5 cohorts each. At the same time, the normal strength of the cohort was raised to 600 men; the 1st cohort, under the primus pilus, carried the legionary eagle. The cavalry remained formed in turmæ of 30 rank and file and 3 decurions, the 1st of whom commanded the turma. The armature of the Roman infantry consisted of a shield of demi-cylindric shape, 4 feet by 2½, made of wood, covered with leather and strengthened with iron fastenings; in the middle it had a boss (*umbo*) to parry off spear-thrusts. The helmet was of brass, generally with a prolongation behind to protect the neck, and fastened on with leather bands covered with brass scales. The breastplate, about a foot square, was fastened on a leather corslet with scaled straps passing over the shoulder; for the centurions, it consisted of a coat of mail covered with brass scales. The right leg, exposed when advanced for the sword-thrust, was protected by a brass plate. Beside the short sword, which was used for thrusting more than for cutting, the soldiers carried the pilum, a heavy spear 4½ feet wood, with a projecting iron point of 1½ foot, or nearly 6 feet in all long, but 2½ inches square in the wood, and weighing about 10 or 11 lbs. When thrown at 10 or 15 paces distance, it often penetrated shields and breastplates, and almost every time threw down its man. The velites, lightly equipped, carried light short javelins. In the later periods of the republic, when barbaric auxiliaries undertook the light service, this class of troops disappears entirely. The cavalry were provided with defensive armor similar to that of the infantry, a lance and a longer sword. But the Roman national cavalry was not very good, and preferred to fight dismounted. In later periods it was entirely done away with, and Numidian, Spanish, Gallic, and German horsemen, supplanted it. The tactical disposition of the troops admitted of great mobility. The manipuli were formed with intervals equal to their extent of front; the depth varied from 5 or 6 to 10 men. The manipuli of the 2d line were placed behind the intervals of the 1st; the triarii still further to the rear, but in one unbroken line. According to circumstances, the manipuli of each line could close up or form line without intervals, or those of the 2d line could march up to fill the intervals of the 1st; or else, where greater depth was required, the manipuli of the principes closed up each in rear of the corresponding manipulus of the hastati, doubling its depth. When opposed to the elephants of Pyrrhus, the 3 lines all formed with intervals, each manipulus covering the one in its front, so as to leave room for the animals to pass straight through the order of battle. In this formation the clumsiness of the phalanx was in every way successfully overcome. The legion could move and manœuvre, without breaking its order of battle, in ground where the phalanx durst not venture without the utmost risk. One or two manipuli at most would have to shorten their front to defile past an obstacle; in a few moments, the front was restored. The legion could cover the whole of its front by light troops, as they could retire, on the advance ot the line, through the intervals. But the principal advantage was the disposition in a plurality of lines, brought into action successively, according to the requirements of the moment. With the phalanx, one shock had to decide. No fresh troops were in reserve to take up the fight in case of a reverse—in fact that case was never provided for. The legion could engage the enemy with its light troops and cavalry on the whole of his front—could oppose to the advance of his phalanx its first line of hastati, which was not so easily beaten, as at least 6 of the 10 manipuli had first to be broken singly—could wear out the strength of the enemy by the advance of the hastati, and finally decide the victory by the triarii. Thus the troops and the progress of the battle remained in the hand of the general, while the phalanx, once engaged, was irretrievably engaged with all its strength, and had to see the battle out. If the Roman general desired to break off the combat, the legionary organization permitted him to take up a position with his reserves, while the troops engaged before retired through the intervals, and took up a position in their turn. Under all circumstances, there was always a portion of the troops in good order, for even if the triarii were repulsed, the 2 first lines had re-formed behind them. When the legions of Flaminius met Philip's phalanx in the plains of Thessaly, their first attack was at once repulsed; but charge following charge, the Macedonians got tired and lost part of their compactness of formation; and wherever a sign of disorder manifested itself, there was a Roman manipulus to attempt an inroad into the clumsy mass. At last, 20 manipuli attacking the flanks and rear of the phalanx, tactical continuity could no longer be maintained; the deep line dissolved into a swarm of fugitives, and the battle was lost. Against cavalry, the legion formed the *orbis*, a sort of square with baggage in the centre. On the march, when an attack was to be apprehended, it formed the *legio quadrata*, a sort of lengthened column with a wide front, baggage in the centre. This was of course possible in the open plain, only where the line of march could go across the country. In Cæsar's time the legions were mostly recruited by voluntary enlistment in Italy. Since the Social war, the right of citizenship, and with it liability for service, was extended to all Italy, and consequently there were far more men available than required. The pay was about equal to the earnings of a laborer; recruits, therefore, were plentiful, even without having recourse to the conscription. In exceptional cases only were legions recruited in the provinces; thus Cæsar had his fifth legion recruited in Roman Gallia, but afterward it received the Roman naturalization *en masse*. The legions were far from having the nominal strength of 4,500 men; those of Cæsar were seldom much above 8,000. Levies of recruits were formed into new legions (*legiones tironum*), rather than mixed with the veterans in the old legions; these new legions were at first excluded from battles in the open field, and principally used for guarding the camp. The legion was divided into 10 cohorts of 3 manipuli each. The names of hastati, principes, triarii, were maintained as far as necessary to denote the rank of officers according to the system indicated above; as to the soldiers, these names had lost all significance. The 6 centurions of the first cohort of each legion were, by right, present at councils of war. The centurions rose from the ranks, and seldom attained higher command; the school for superior officers was in the personal staff of the general, consisting of young men of education, who soon advanced to the rank of *tribuni militum*, and later on to that of *legati*. The armament of the soldier remained the same: pilum and sword. Beside his accoutrements, the soldier carried his personal baggage, weighing from 35 to 60 pounds. The contrivance for carrying it was so clumsy that the baggage had first to be deposited before the soldier was ready for battle. The camp-utensils of the army were carried on the back of horses and mules, of which a legion required about 500. Every legion had its eagle, and every cohort its colors. For light infantry, Cæsar drew from his legions a certain number of men (*antesignani*), men equally fit for light service and for close fight in line. Beside these, he had his provincial auxiliaries, Cretan archers, Balearic slingers, Gallic and Numidian contingents, and German mercenaries. His cavalry consisted partly of Gallic, partly of German troops. The Roman velites and cavalry had disappeared some time ago.—The staff of the army consisted of the *legati*, appointed by the senate, the lieutenants of the general, whom he employed to command detached corps, or portions of the order of battle. Cæsar, for the first time, gave to every legion a legate as standing commander. If there were not legati enough, the *quæstor*, too, had to take the command of a legion. He was properly the paymaster of the army, and chief of the commissariat, and was assisted in this office by numerous clerks and orderlies. Attached to the staff were the *tribuni militum*, and the young volunteers above mentioned (*contubernales*, *comites prætorii*), doing duty as adjutants, orderly officers; but in battle they fought in line, the same as private soldiers, in the ranks of the *cohors prætoria*, consisting of the lictors, clerks, servants, guides (*speculatores*), and orderlies (*apparitores*) of the head-quarters. The general, beside, had a sort of personal guard, consisting of veterans, who voluntarily had reënlisted on the call of their former chief. This troop, mounted on the march, but fighting on foot, was considered the *élite* of the army; it carried and guarded the *vexillum*, the signal-banner for the whole army. In battle, Cæsar generally fought in 3 lines, 4 cohorts per legion in the first, and 3 in the second and third lines each; the cohorts of the second line dressed on the intervals of the first. The second line had to relieve the first; the third line formed a general reserve for decisive manœuvres against the front or flank of the enemy, or for parrying his decisive thrusts. Wherever the enemy so far outflanked the line that its prolongation became necessary, the army was disposed in two lines only. One single line (*acies simplex*) was made use of in an extreme case of need only, and then without intervals between the cohorts; in the defence of a camp, however, it was the rule, as the line was still 8 to 10 deep, and could form a reserve from the men who had no room on the parapet. Augustus completed the work of making the Roman troops a regular standing army. He had 25 legions distributed all over the empire, of which 8 were on the Rhine (considered the main strength, *præcipuum robur*, of the army), 3 in Spain, 2 in Africa, 2 in Egypt, 4 in Syria and Asia Minor, 6 in the Danubian countries. Italy was garrisoned by chosen troops recruited exclusively in that country, and forming the imperial guard; this consisted of 12, later on, of 14 cohorts; beside these the city of Rome had 7 cohorts of municipal guards (*vigiles*), formed, originally, from emancipated slaves. Beside this regular army, the provinces had to furnish, as formerly, their light auxiliary troops, now mostly reduced to a sort of militia for garrison and police duty. On menaced frontiers, however, not only these auxiliary troops, but foreign mercenaries, too, were employed in active service. The number of legions increased under Trajan to 30, under Septimius Severus to 33. The legions, beside their numbers, had names, taken from their stations (*L. Germanica*, *L. Italica*), from emperors (*L. Augusta*), from gods (*L. Primigenia*, *L. Apollinaris*), or conferred as honorary distinctions (*L. fidelis*, *L. pia*, *L. invicta*). The organization of the legion underwent some changes. The commander was now called præfectus. The first cohort was doubled in strength (*cohors milliaria*), and the normal strength of the legion raised to 6,100 infantry and 726 cavalry; this was to be the minimum, and in case of need one or more *cohortes milliariæ* were to be added. The *cohors milliaria* was commanded by a military tribune, the others by tribunes or *præpositi*; the rank of *centurio* was thus confined to subalterns. The admission of liberated, or non-liberated slaves, natives of the provinces, and all sorts of people into the legions, became the rule; Roman citizenship being required for the prætorians in Italy only, and even there this was abandoned in later times. The Roman nationality of the army was thus very soon drowned in the influx of barbaric and semi-barbaric, Romanized and non-Romanized elements; the officers alone maintained the Roman character. This deterioration of the elements composing the army very soon reacted upon its armament and tactics. The heavy breastplate and pilum were thrown overboard; the toilsome system of drill, which had formed the conquerors of the world, was neglected; camp-followers and luxuries became necessary to the army, and the *impedimenta* (train of baggage) increased as strength and endurance decreased. As had been the case in Greece, the decline was marked by neglect of the heavy line-infantry, by a foolish fancy for all sorts of light armament, and by the adoption of barbaric equipments and tactics. Thus we find innumerable classifications of light troops (*auxiliatores*, *exculcatores*, *jaculatores*, *excursatores*, *præcursatores*, *scutati*, *funditores*, *balistarii*, *tragularii*), armed with all sorts of projectiles, and we are told by Vegetius that the cavalry had been improved in imitation of the Goths, Alani, and Huns. Finally, all distinction of equipment and armament between Romans and barbarians ceased, and the Germans, physically and morally superior, marched over the bodies of the un-Romanized legions.—The conquest of the Occident by the Germans thus was opposed by but a small remnant, a dim tradition of the ancient Roman tactics; but even this small remnant was now destroyed. The whole of the middle ages is as barren a period for the development of tactics as for that of any other science. The feudal system, though in its very origin a military organization, was essentially opposed to discipline. Rebellions and secessions of large vassals, with their contingents, were of regular occurrence. The distribution of orders to the chiefs turned generally into a tumultuous council of war, which rendered all extensive operations impossible. Wars, therefore, were seldom directed on decisive points; struggles for the possession of a single locality filled up entire campaigns. The only operations of magnitude occurring in all this period (passing over the confused times from the 6th to the 12th century), are the expeditions of the German emperors against Italy, and the crusades, the one as resultless as the other.—The infantry of the middle ages, composed of the feudal retainers and part of the peasantry, was chiefly composed of pikemen, and mostly contemptible. It was great sport for the knights, covered as they were with iron all over, to ride singly into this unprotected rabble, and lay about them with a will. A portion of the infantry was armed, on the continent of Europe, with the crossbow, while in England the longbow became the national weapon of the peasantry. This longbow was a very formidable weapon, and secured the superiority of the English over the French at Crecy, Poitiers, and Agincourt. Easily protected against rain, which rendered the crossbow unserviceable at times, it projected its arrow to distances above 200 yards, or not much less than the effective range of the old smooth-bored musket. The arrow penetrated a one-inch board, and would even pass through breastplates. Thus it long maintained its place even against the first small fire-arms, especially as six arrows could be shot off while the musket of that epoch could be loaded and fired once; and even as late as the end of the 16th century Queen Elizabeth attempted to reintroduce the national longbow as a weapon of war. It was especially effective against cavalry; the arrows, even if the armor of the men-at-arms was proof against them, wounded or killed the horses, and the unhorsed knights were thereby disabled, and generally made prisoners. The archers acted either in skirmishing order or in line. Cavalry was the decisive arm of the middle ages. The knights in full armor formed the first effective body of heavy cavalry, charging in regular formation, which we meet with in history; for Alexander's cataphracti, though they decided the day at Arbela, were so much an exception that we hear nothing more of them after that day, and during the whole sequel of ancient history, infantry maintains its preëminent rank in battle. The only progress, then, which the middle ages have bequeathed to us, is the creation of a cavalry, from which our modern mounted service descends in a direct line. And yet, what a clumsy thing this cavalry was, is proved by the one fact, that during the whole middle ages the cavalry was the heavy, slow-moving arm, while all light service and quick movements were executed by infantry. The knights, however, did not always fight in close order. They preferred fighting duels with single opponents, or spurring their horses into the midst of the hostile infantry; thus the mode of fighting out a battle was carried back to the Homeric times. When they did act in close order, they charged either in line (one deep, the more lightly-armed esquires forming the second rank) or in deep column. Such a charge was undertaken, as a rule, against the knights (men-at-arms) only of the opposing army; upon its infantry it would have been wasted. The horses, heavily laden with their own as well as their rider's armor, could run but slowly and for short distances. During the crusades, therefore, and in the wars with the Mongolians in Poland and Silesia, this immovable cavalry was constantly tired out, and, finally, worsted by the active light horsemen of the East. In the Austrian and Burgundian wars against Switzerland, the men-at-arms, entangled in difficult ground, had to dismount and form a phalanx even more immovable than that of Macedon; in mountain defiles, rocks and stumps of trees were hurled down upon them, in consequence of which the phalanx lost its tactical order, and was scattered by a resolute attack.—Toward the 14th century a kind of lighter cavalry was introduced, and a portion of the archers were mounted to facilitate their manœuvring; but these and other changes were soon rendered useless, abandoned, or turned to different account by the introduction of that new element, which was destined to change the whole system of warfare—gunpowder.—From the Arabs in Spain the knowledge of the composition and the use of gunpowder spread to France and the rest of Europe; the Arabs themselves had received it from nations further east, who again had it from the original inventors, the Chinese. In the first half of the 14th century cannon first was introduced into European armies; heavy, unwieldy pieces of ordnance, throwing stone balls, and unfit for any thing but the war of sieges. Small arms were, however, soon invented. The city of Perugia in Italy supplied itself in 1364, with 500 hand-guns, the barrels not more than eight inches long; they subsequently gave rise to the manufacture of pistols (so called from Pistoja in Tuscany). Not long afterward longer and heavier hand-guns (*arquebuses*) were manufactured, corresponding to our present musket; but short and heavy in the barrel, they had but a restricted range, and the matchlock was an almost absolute hinderance to correct aim, beside having nearly every other possible disadvantage. Toward the close of the 14th century there was no military force in western Europe without its artillery and arquebusiers. But the influence of the new arm on general tactics was very little perceptible. Both large and small fire-arms took a very long time in loading, and what with their clumsiness and costliness, they had not even superseded the crossbow by 1450. —In the mean time the general breaking up of the feudal system, and the rise of cities, contributed to change the composition of armies. The larger vassals were either subdued by central authority, as in France, or had become quasi-independent sovereigns, as in Germany and Italy. The power of the lesser nobility was broken by the central authority in conjunction with the cities. The feudal armies no longer existed; new armies were formed from the numerous mercenaries whom the ruin of feudalism had set free to serve those who would pay them. Thus, something approaching standing armies arose; but these mercenaries, men of all nations, difficult to keep in order, and not very regularly paid, committed very great excesses. In France, King Charles VII. therefore formed a permanent force from native elements. In 1445 he levied 15 *compagnies d'ordonnance* of 600 men each; in all, 9,000 cavalry garrisoned in the towns of the kingdom, and paid with regularity. Every company was divided into 100 lances; a lance consisted of one man-at-arms, 3 archers, an esquire, and a page. Thus they formed a mixture of heavy cavalry with mounted archers, the 2 arms, in battle, acting of course separately. In 1448 he added 16,000 francs-archers, under 4 captains-general, each commanding 8 companies of 500 men. The whole of the archers had the crossbow. They were recruited and armed by the parishes, and free from all taxes. This may be considered the first standing army of modern times.—At the close of this first period of modern tactics, as they emerged from mediæval confusion, the state of things may be summed up as follows: The main body of the infantry, consisting of mercenaries, was armed with pike and sword, breastplate and helmet. It fought in deep, close masses, but, better armed and drilled than the feudal infantry, it showed greater tenacity and order in combat. The standing levies and the mercenaries, soldiers by profession, were of course superior to the casual levies and disconnected bands of feudal retainers. The heavy cavalry now found it sometimes necessary to charge in close array against infantry. The light infantry was still principally composed of archers, but the use of the hand-gun for skirmishers gained ground. The cavalry remained, as yet, the principal arm; heavy cavalry, men-at-arms encased in iron, but no longer composed, in every case, of the nobility, and reduced from its former chivalrous and Homeric mode of fighting to the more prosaic necessity of charging in close order. But the unwieldiness of such cavalry was now generally felt, and many devices were planned to find a lighter kind of horse. Mounted archers, as has been stated, had in part to supply this want; in Italy and the neighboring countries the *stradioti*, light cavalry on the Turkish plan, composed of Bosnians and Albanian mercenaries, a sort of Bashi-Bazouks, found ready employment, and were much feared, especially in pursuits. Poland and Hungary had, beside the heavy cavalry adopted from the West, retained their own national light cavalry. The artillery was in its infancy. The heavy guns of the time were, indeed, taken into the field, but could not leave their position after it was once taken up; the powder was bad, the loading difficult and slow, and the range of the stone-balls short.—The close of the 15th and the beginning of the 16th century are marked by a double progress; the French improved the artillery, and the Spaniards gave a new character to the infantry. Charles VIII. of France so far made his guns movable that, not only could he take them into the field, but make them change their position during battle and follow the other troops in their movements, which, however, were not very quick. He thereby became the founder of field artillery. His guns, mounted on wheeled carriages and plentifully horsed, proved immensely superior to the old-fashioned clumsy artillery of the Italians (drawn by bullocks), and did such execution in the deep columns of the Italian infantry, that Macchiavelli wrote his "Art of War" principally in order to propose formations, by which the effect of such artillery on infantry could be counteracted. In the battle of Marignano, Francis I. of France defeated the Swiss pikemen by the effective fire and the mobility of this artillery, which, from flanking positions, enfiladed the Swiss order of battle. But the reign of the pike, for infantry, was on the decline. The Spaniards improved the common hand-gun (*arquebuse*) and introduced it into the regular heavy infantry. Their musket (*hacquebutte*) was a heavy, long-barrelled arm, bored for 2-ounce bullets, and fired from a rest formed by a forked pole. It sent its bullet through the strongest breastplate, and was therefore decisive against the heavy cavalry, which got into disorder as soon as the men began falling. Ten or 15 musketeers were placed with every company of pikemen, and the effect of their fire, at Pavia, astonished both allies and enemies. Frundsberg relates that, in that battle a single shot from such a musket used to bring down several men and horses. From that time dates the superiority of the Spanish infantry, which lasted for above 100 years.—The war consequent upon the rebellion of the Netherlands was of great influence on the formation of armies. Both Spaniards and

Dutch improved all arms considerably. Hitherto, in the armies of mercenaries, every man offering for enlistment had to come fully equipped, armed, and acquainted with the use of his arms. But in this long war, carried on during 40 years on a small extent of country, the available recruits of this class soon became scarce. The Dutch had to put up with such able-bodied volunteers as they could get, and the government now was under the necessity of seeing them drilled. Maurice of Nassau composed the first drill-regulations of modern times, and thereby laid the foundation for the uniform instruction of a whole army. The infantry began again to march in step; it gained much in homogeneity and solidity. It was now formed into smaller bodies; the companies, hitherto 400 to 500, were reduced to 150 and 200 men, 10 companies forming a regiment. The improved musket gained ground upon the pike; one-third of the whole infantry consisted of musketeers, mixed in each company with the pikemen. These latter, being required for hand-to-hand fight only, retained their helmet, breastplate, and steel gauntlets; the musketeers threw away all defensive armor. The formation was generally 2 deep for the pikemen, and from 5 to 8 deep for the musketeers; as soon as the first rank had fired, it retired to load again. Still greater changes took place in cavalry, and here, too, Maurice of Nassau took the lead. In the impossibility of forming a heavy cavalry of men-at-arms, he organized a body of light-horse recruited in Germany, armed them with a helmet, cuirass, brassarts for the arms, steel gauntlets, and long boots, and as with the lance they would not have been a match for the heavy-armed Spanish cavalry, he gave them a sword and long pistols. This new class of horsemen, approaching our modern cuirassiers, soon proved superior to the far less numerous and less movable Spanish men-at-arms, whose horses they shot down before the slow mass broke in upon them. Maurice of Nassau had his cuirassiers drilled as well as his infantry; he so far succeeded, that he could venture to execute in battle, changes of front and other evolutions, with large and small bodies of them. Alva, too, soon found the necessity of improving his light horse; hitherto they had been fit for skirmishing and single combat only, but under his direction they soon learned to charge in a body, the same as the heavy cavalry. The formation of cavalry remained still 5 to 8 deep. About this time Henry IV. of France introduced a new kind of mounted service, the dragoons, originally infantry, mounted on horses for quicker locomotion only; but very few years after their introduction, they were used as cavalry as well, and equipped for this double service. They had neither defensive armor nor high boots, but a cavalry sword, and sometimes a lance; beside, they carried the infantry musket, or a shorter carbine. These troops did not, however, come up to the expectations which had led to their formation; they soon became a portion of the regular cavalry, and ceased to fight as infantry. (The emperor Nicholas of Russia attempted to revive the original dragoons by forming a body of 16,000 men strong, fit for dismounted as well as mounted service; they never found occasion to dismount in battle, always fought as cavalry, and are now broken up and incorporated, as cavalry dragoons, with the remaining Russian cavalry.) In artillery the French maintained the superiority they had gained. The prolonge was invented by them about this time, and case-shot introduced by Henry IV. The Spaniards and Dutch, too, lightened and simplified their artillery, but still it remained a clumsy concern, and light, movable pieces of effective calibre and range were still unknown.—With the 30 years' war opens the period of Gustavus Adolphus, the great military reformer of the 17th century. His infantry regiments were composed of two-thirds musketeers, and one-third pikemen. Some regiments consisted of musketeers alone. The muskets were so much lightened, that the rest for firing them became unnecessary. He also introduced paper cartridges, by which loading was much facilitated. The deep formation was done away with; his pikemen stood 6, his musketeers only 3 deep. These latter were drilled in firing by platoons and ranks. The unwieldy regiments of 2,000 or 3,000 men were reduced to 1,300 or 1,400, in 8 companies, and 2 regiments formed into a brigade. With this formation he defeated the deep masses of his opponents, often disposed, like a column or full square, 30 deep, upon which his artillery played with terrible effect. The cavalry was reorganized upon similar principles. The men-at-arms were completely done away with. The cuirassiers lost the brassarts, and some other useless pieces of defensive armor; they were thus made considerably lighter and more movable. His dragoons fought nearly always as cavalry. Both cuirassiers and dragoons were formed only 3 deep, and had strict orders not to lose time with firing, but to charge at once sword in hand. They were divided into squadrons of 125 men. The artillery was improved by the addition of light guns. The leather guns of Gustavus Adolphus are celebrated, but were not long retained. They were replaced by cast-iron 4-pounders, so light that they could be drawn by 2 horses; they could be fired 6 times while a musketeer fired twice; 2 of these were attached to every regiment of infantry. Thus, the division of light and heavy field artillery was established;

the light guns accompanied the infantry while the heavy ones remained in reserve, or took up a position for the whole of the battle. The armies of this time begin to show the increasing preponderance of infantry over cavalry. At Leipsic, in 1631, Gustavus Adolphus had 19,000 infantry and 11,000 cavalry; Tilly had 31,000 infantry and 13,000 cavalry. At Lützen, 1632, Wallenstein had 24,000 infantry and 16,000 cavalry (in 170 squadrons). The number of guns, too, increased with the introduction of light pieces; the Swedes often had from 5 to 12 guns for every 1,000 men; and at the battle of the Lech, Gustavus Adolphus forced the passage of that river under cover of the fire of 72 heavy guns. During the latter half of the 17th and the first half of the 18th century, the pike, and all defensive armor for infantry, was finally done away with by the general introduction of the bayonet. This weapon, invented in France about 1640, had to struggle 80 years against the pike. The Austrians first adopted it for all their infantry, the Prussians next; the French retained the pike till 1703, the Russians till 1721. The flint-lock, invented in France about the same time as the bayonet, was also gradually introduced, before the year 1700, into most armies. It materially abridged the operation of loading, protected, to some degree, the powder in the pan from rain, and thus contributed very much to the abolition of the pike. Yet firing was still so slow that a man was not expected to use more than from 24 to 36 cartridges in a battle; until in the latter half of this period improved regulations, better drill, and further improvement in the construction of small arms (especially the iron ramrod, first introduced in Prussia), enabled the soldier to fire with considerable rapidity. This necessitated a still further reduction of the depth of formation, and infantry was now formed only 4 deep. A species of *élite* infantry was created in the companies of grenadiers, originally intended to throw hand-grenades before coming to close quarters, but soon reduced to fight with the musket only. In some German armies riflemen had been formed as early as the 30 years' war; the rifle itself had been invented at Leipsic in 1498. This arm was now mixed with the musket, the best shots in each company being armed with it; but, out of Germany, the rifle found but little favor. The Austrians had also a sort of light infantry, called *pandours:* Croatian and Servian irregulars from the military frontier against Turkey, useful in roving expeditions and pursuit, but, from the tactics of the day and their absolute want of drill, useless in battle. The French and Dutch created, for similar purposes, irregular infantry called *compagnies franches*. Cavalry, too, was lightened in all armies. There were no longer any men-at-arms; the cuirassiers maintained the breastplate and helmet only; in France and Sweden, the breastplate was done away with too. The increasing efficiency and rapidity of infantry fire told very much against cavalry. It was soon considered perfectly useless for this latter arm to charge infantry sword in hand; and the opinion of the irresistibility of a firing line became so prevalent that cavalry, too, was taught to rely more on its carbines than on the sword. Thus, during this period, it often occurs that 2 lines of cavalry maintain a firing fight against each other the same as if they were infantry; and it was considered very daring, to ride up to 20 yards from the enemy, fire a volley, and charge at a trot. Charles XII., however, stuck to the rule of his great predecessor. His cavalry never stopped to fire; it always charged, sword in hand, against any thing opposing it, cavalry, infantry, batteries, and intrenchments; and always with success. The French, too, broke through the new system and recommenced relying on the sword only. The depth of cavalry was still further reduced from 4 to 3. In artillery, the lightening of the guns, the use of cartridges and case-shot, became, now, general. Another great change was that of the incorporation of this arm with the army. Hitherto, though the guns belonged to the state, the men serving them were no proper soldiers, but formed a sort of guild, and artillery was considered not an arm but a handicraft. The officers had no rank in the army, and were considered more related to master-tailors and carpenters than to gentlemen with a commission in their pockets. About this time, however, artillery was made a component part of the army, and divided into companies and battalions; the men were converted into permanent soldiers, and the officers ranked with the infantry and cavalry. The centralization and permanence of the armed contingent upon this change, paved the way for the science of artillery, which, under the old system, could not develop itself.—The passage from deep formation to line, from the pike to the musket, from the supremacy of cavalry to that of infantry, had thus been gradually accomplished when Frederic the Great opened his campaigns, and, with them, the classical era of line tactics. He formed his infantry 3 deep, and got it to fire 5 times in 1 minute. In his very first battles at Mollwitz, this infantry deployed in line, and repelled, by its rapid fire, all charges of the Austrian cavalry, which had just totally routed the Prussian horse; after finishing with the cavalry, the Prussian infantry attacked the Austrian infantry, defeated it, and thus won the battle. Formation of squares against cavalry was never attempted in great battles, but only when infantry, on the march, was surprised by hostile cavalry. In a battle, the extreme wings of the infantry stretched round *en potence*, when menaced by cavalry, and this was generally found sufficient. To oppose the Austrian pandours, Frederic formed similar irregular troops, infantry and cavalry, but never relied on them in battle, where they seldom were engaged. The slow advance of the firing-line decided his battles. Cavalry, neglected under his predecessor, was now made to undergo a complete revolution. It was formed only 2 deep, and firing, except on pursuit, was strictly prohibited. Horsemanship, considered, hitherto, of minor importance, was now cultivated with the greatest attention. All evolutions had to be practised at full speed, and the men were required to remain well closed up. By the exertions of Seydlitz, the cavalry of Frederic was made superior to any other then existing or ever existing before it; and its bold riding, close order, dashing charge, and quick rallying, have never yet been equalled by any that succeeded it. The artillery was considerably lightened, and, indeed, so much that some of the heavy-calibred guns were not able to stand full charges, and had, therefore, to be abolished afterward. Yet the heavy artillery was still very slow and clumsy in its movements, owing to inferior and heavy carriages and imperfect organization. In battle, it took up its position from the first, and sometimes changed it for a second position, more in advance, but manœuvring, there was none. The light artillery, the regimental guns attached to the infantry, were placed in front of the infantry-line, 50 paces in advance of the intervals of the battalions; they advanced with the infantry, the guns dragged by the men, and opened fire with canister at 300 yards. The number of guns was very large, from 3 to 6 guns per 1,000 men. The infantry, as well as the cavalry, were divided into brigades and divisions, but as there was scarcely any manœuvring after the battle had once begun, and every battalion had to remain in its proper place in the line, these subdivisions had no tactical influence; with the cavalry, a general of brigade might, during a charge, now and then, have to act upon his own responsibility; but with the infantry, such a case could never occur. This line-formation, infantry in 2 lines in the centre, cavalry in 2 or 3 lines on the wings, was a considerable progress upon the deep formation of former days; it developed the full effect of infantry fire, as well as of the charge of cavalry, by allowing as many men as possible to act simultaneously; but its very perfection in this point confined the whole army, as it were, in a strait-waistcoat. Every squadron, battalion, or gun, had its regulated place in the order of battle, which could not be inverted or in any way disturbed without affecting the efficiency of the whole. On the march, therefore, every thing had to be so arranged that when the army formed front again for encampment or battle, every subdivision got exactly into its correct place. Thus, any manœuvres to be executed, had to be executed with the whole army; to detach a single portion of it for a flank attack, to form a particular reserve for the attack, with superior forces, of a weak point, would have been impracticable and faulty with such slow troops, fit, only, to fight in line, and with an order of battle of such stiffness. Then, the advance in battle of such long lines was executed with considerable slowness, in order to keep up with the alignment. Tents followed the army constantly, and were pitched every night; the camp was slightly intrenched. The troops were fed from magazines, the baking establishments accompanying the army as much as possible. In short, the baggage and other train of the army were enormous, and hampered its movements to a degree unknown nowadays. Yet, with all these drawbacks, the military organization of Frederic the Great was by far the best of its day, and was eagerly adopted by all other European governments. The recruiting of the forces was almost everywhere carried on by voluntary enlistments, assisted by kidnapping; and it was only after very severe losses that Frederic had recourse to forced levies from his provinces.—When the war of the coalition against the French republic began, the French army was disorganized by the loss of its officers, and numbered less than 150,000 men. The numbers of the enemy were far superior; new levies became necessary, and were made to an immense extent, in the shape of national volunteers, of which, in 1793, there must have been at least 500 battalions in existence. These troops were not drilled, nor was there time to drill them according to the complicated system of line-tactics, and to the degree of perfection required by movements in line. Every attempt to meet the enemy in line was followed by a signal defeat, though the French had far superior numbers. A new system of tactics became necessary. The American revolution had shown the advantage to be gained with undisciplined troops, from extended order and skirmishing fire. The French adopted it, and supported the skirmishers by deep columns, in which a little disorder was less objectionable, so long as the mass remained well together. In this formation, they launched their superior numbers against the enemy, and were generally successful. This new formation and the want of experience of their troops led them to fight in broken ground, in villages and woods, where they found shelter from the enemy's fire, and where his line was invariably disordered; their want of tents, field-batteries, &c., compelled them to bivouac without shelter, and to live upon what the country afforded them. Thus they gained a mobility unknown to their enemies, who were encumbered with tents and all sorts of baggage. When the revolutionary war had produced, in Napoleon, the man who reduced this new mode of warfare to a regular system, combined it with what was still useful in the old system, and brought the new method at once to that degree of perfection which Frederic had given to line-tactics—then the French were almost invincible, until their opponents had learnt from them, and organized their armies upon the new model. The principal features of this new system are: the restoration of the old principle that every citizen is liable, in case of need, to be called out for the defence of the country, and the consequent formation of the army, by compulsory levies, of greater or less extent, from the whole of the inhabitants; a change by which the numeric force of armies was at once raised to three-fold the average of Frederic's time, and might, in case of need, be increased to larger proportions still. Then, the discarding of camp utensils, and of depending for provisions upon magazines, the introduction of the bivouac and of the rule that war feeds war; the celerity and independence of an army was hereby increased as much as its numeric force by the rule of general liability to serve. In tactical organization, the principle of mixing infantry, cavalry, and artillery in the smaller portions of an army, in corps and divisions, became the rule. Every division thus became a complete army on a reduced scale, fit to act independently, and capable of considerable power of resistance even against superior numbers. The order of battle, now, was based upon the column; it served as the reservoir, from which sallied and to which returned, the swarms of skirmishers; as the wedge-like compact mass to be launched against a particular point of the enemy's line; as the form to approach the enemy and then to deploy, if the ground and the state of the engagement made it desirable to oppose firing-lines to the enemy. The mutual supporting of the 3 arms developed to its full extent by their combination in small bodies, and the combination of the 3 forms of fighting; skirmishers, line, and column, composed the great tactical superiority of modern armies. Any kind of ground, thereby, became fit for fighting in it; and the ability of rapidly judging the advantages and disadvantages of ground, and of at once disposing troops accordingly, became one of the chief requirements of a captain. And not only in the commander-in-chief, but in the subordinate officers, these qualities, and general aptness for independent command, were now a necessity. Corps, divisions, brigades, and detachments, were constantly placed in situations where their commanders had to act on their own responsibility; the battle-field no longer presented its long unbroken lines of infantry disposed in a vast plain with cavalry on the wings; but the single corps and divisions, massed in columns, stood hidden behind villages, roads, or hills, separated from each other by seemingly large intervals, while but a small portion of the troops appeared actually engaged in skirmishing and firing artillery, until the decisive moment approached. Lines of battle extended with the numbers and with this formation; it was not necessary actually to fill up every interval with a line visible to the enemy, so long as troops were at hand to come up when required. Turning of flanks now became generally a strategical operation, the stronger army placing itself completely between the weaker one and its communications, so that a single defeat could annihilate an army and decide a campaign. The favorite tactical manœuvre was the breaking through the enemy's centre, with fresh troops, as soon as the state of affairs showed that his last reserves were engaged. Reserves, which in line-tactics would have been out of place and would have deducted from the efficiency of the army in the decisive moment, now became the chief means to decide an action. The order of battle, extending as it did in front, extended also in depth; from the skirmishing line to the position of the reserves the depth was very often 2 miles and more. In short, if the new system required less drill and parade-precision, it required far greater rapidity, exertions, and intelligence from every one, from the highest commander as well as the lowest skirmisher; and every fresh improvement made since Napoleon, tends in that direction.—The changes in the *matériel* of armies were but trifling during this period; constant wars left little time for such improvements the introduction of which requires time. Two very important innovations took place in the French army shortly before the revolution; the adoption of a new model of musket of reduced calibre and windage, and with a curved stock instead of the straight one hitherto in use. This weapon, more accurately worked, contributed a great deal toward the superiority of the French skirmishers, and remained the model upon which with trifling alterations the muskets in use in all armies up to the introduction of percussion locks, were constructed. The second was the simplification and improvement of the artillery by Gribeauval. The French artillery under Louis XV. was completely neglected; the guns were of all sorts of calibres, the carriages were old-fashioned, and the models upon which they were constructed not even uniform. Gribeauval, who had served during the 7 years' war with the Austrians, and there seen better models, succeeded in reducing the number of calibres, equalizing and improving the models, and greatly simplifying the whole system. It was with his guns and carriages that Napoleon fought his wars. The English artillery, which was in the worst possible state when the war with France broke out, was gradually, but slowly, considerably improved; with it originated the block-tail carriage, which has since been adopted by many continental armies, and the arrangement for mounting the foot artillerymen on the limbers and ammunition wagons. Horse artillery, invented by Frederic the Great, was much cultivated during Napoleon's period, especially by himself, and its proper tactics were first developed. When the war was over, it was found that the British were the most efficient in this arm. Of all large European armies, the Austrian is the only one which supplies the place of horse-artillery by batteries in which the men are mounted on wagons provided for the purpose.—The German armies still kept up the especial class of infantry armed with rifles, and the new system of fighting in extended order gave a fresh importance to this arm. It was especially cultivated, and in 1838 taken up by the French, who felt the want of a long range musket for Algiers. The *tirailleurs de Vincennes*, afterward *chasseurs á pied*, were formed, and brought to a state of efficiency without parallel. This formation gave rise to great improvements in rifles, and by which both range and precision were increased to a wonderful degree. The names of Delvigne, Thouvenot, Minié, became celebrated thereby. For the totality of the infantry, the percussion lock was introduced between 1830 and 1840 in most armies; as usual, the English and the Russians were the last. In the mean time, great efforts were made in various quarters still further to improve small arms, and to produce a musket of superior range which could be given to the whole of the infantry. The Prussians introduced the needle gun, a rifle arm loaded at the breech, and capable of very rapid firing, and having a long range; the invention, originated in Belgium, was considerably improved by them. This gun has been given to all their light battalions; the remainder of the infantry have recently got their old muskets, by a very simple process, turned into Minié rifles. The English were the first this time to arm the whole of their infantry with a superior musket, viz., the Enfield rifle, a slight alteration of the Minié; its superiority was fully proved in the Crimea, and saved them at Inkerman.—In tactical arrangements, no changes of importance have taken place for infantry and cavalry, if we except the great improvement of light infantry tactics by the French *chasseurs*, and the new Prussian system of columns of companies, which latter formation, with perhaps some variations, will no doubt soon become general from its great tactical advantages. The formation is still 3 deep with the Russians and Austrians, the English have formed 2 deep ever since Napoleon's time; the Prussians march 3 deep, but mostly fight 2 deep, the 3d rank forming the skirmishers and their supports; and the French, hitherto formed 3 deep, have fought 2 deep in the Crimea, and are introducing this formation in the whole army. As to cavalry, the Russian experiment of restoring the dragoons of the 17th century and its failure have been mentioned.—In artillery, considerable improvements of detail and simplification of calibres, and models for wheels, carriages, &c., have taken place in every army. The science of artillery has been greatly improved. Yet no considerable changes have taken place. Most continental armies carry 6 and 12-pounders; the Piedmontese 8 and 16-pounders; the Spanish 8 and 12-pounders; the French, who hitherto had 8 and 12-pounders, are now introducing Louis Napoleon's so-called howitzer gun, a simple light 12-pounder, from which small shells are also fired, and which is to replace every other kind of field gun. The British have 3 and 6-pounders in the colonies, but in their armies sent out from England, now only use 9-pounders, 12-pounders, and 18-pounders. In the Crimea they even had a field battery of 32-pounders, but it always stuck fast.—The general organization of modern armies is very much alike. With the exception of the British and American, they are recruited by compulsory levy, based either upon conscription, in which case the men, after serving their time, are dismissed for life, or upon the reserve system, in which the time of actual service is short, but the men remain liable to be called out again for a certain time afterward. France is the most striking example of the first, Prussia of the second system. Even in England, where both line and militia are generally recruited by voluntary enlistment, the conscription (or ballot) is by law established for the militia should volunteers be wanting. In Switzerland, no standing army exists; the whole force consists of militia drilled for a short time only. The enlistment of foreign mercenaries is still the rule in some countries; Naples and the Pope still have their Swiss regiments; the French their foreign legion; and England, in case of serious war, is regularly compelled to resort to this expedient. The time of actual service varies very much; from a couple of weeks with the Swiss, 18 months to 2 years with the smaller German states, and 3 years with the Prussians, to 5 or 6 years in France, 12 years in England, and 15 to 25 in Russia. The officers are recruited in various ways. In most armies there are now no legal impediments to advancement from the ranks, but the practical impediments vary very much. In France and Austria a portion of the officers must be taken from the sergeants; in Russia the insufficient number of educated candidates makes this a necessity. In Prussia the examination for officers' commissions, in peace, is a bar to uneducated men; in England advancement from the ranks is a rare exception. For the remainder of the officers, there are in most countries military schools, though with the exception of France, it is not necessary to pass through them. In military education the French, in general education the Prussian officers are ahead; the English and the Russians stand lowest in both. As to the horses required, we believe Prussia is the only country in which the equine population too is subject to compulsory levies, the owners being bought off at fixed rates. With the exceptions named above, the equipment and armament of modern armies is now everywhere nearly the same. There is, of course, a great difference in the quality and workmanship of the material. In this respect, the Russians stand lowest, the English, where the industrial advantages at their command are really made use of, stand highest. The infantry of all armies is divided into line and light infantry. The 1st is the rule, and composes the mass of all infantry; real light infantry is everywhere the exception. Of this latter, the French have at present decidedly the best in quality and a considerable number: 21 battalions of chasseurs, 9 of Zouaves, and 6 of native Algerian tirailleurs. The Austrian light infantry, especially the rifles, are very good, too; there are 32 battalions of them. The Prussians have 9 battalions of rifles and 40 of light infantry; the latter, however, not sufficiently up in their special duty. The English have no real light infantry, except their 6 battalions of rifles, and are, next to the Russians, decidedly the least fit for that kind of duty. The Russians may be said to be without any real light infantry, for their 6 rifle battalions vanish in their enormous army.—Cavalry, too, is everywhere divided into heavy and light. Cuirassiers are always heavy, hussars, chasseurs, chevaux-legers, always light horse. Dragoons and lancers are in some armies light, in others heavy cavalry; and the Russians would also be without light cavalry were it not for the Cossacks. The best light cavalry is undoubtedly that of the Austrians, the national Hungarian hussars and Polish hussars. The same division holds good with artillery, with the exception of the French, who as stated now have only one calibre. In other armies there are still light and heavy batteries, according to the calibres attached to them. Light artillery is still subdivided in horse and foot, the 1st especially intended to act in company with cavalry. The Austrians, as stated, have no horse artillery; the English and French have no proper foot-artillery, the men being carried on the limbers and ammunition wagons.—The infantry is formed into companies, battalions, and regiments. The battalion is the tactical unity; it is the form in which the troops fight, a few exceptional cases left aside. A battalion, therefore, must not be too strong to be commanded by the voice and eye of its chief, nor too weak to act as an independent body in battle, even after the losses of a campaign. The strength, therefore, varies from 600 to 1,400 men; 800 to 1,000 forms the average. The division of a battalion into companies has for its object the fixing of its evolutionary subdivisions, the efficiency of the men in the details of the drill, and the more commodious, economical administration. Practically, companies appear as separate bodies in skirmishing only, and with the Prussians, in the formation in columns of companies, where each of the 4 companies forms columns in 3 platoons; this formation presupposes strong companies, and they are in Prussia 250 strong. The number of companies in a battalion varies as much as their strength. The English have 10, of from 90 to 120 men, the Russians and Prussians 4 of 250 men, the French and Austrians 6 of varying strength. Battalions are formed into regiments, more for administrative and disciplinarian purposes and to insure uniformity of drill, than for any tactical object; in formations for war, therefore, the battalions of one regiment are often separated. In Russia and Austria there are 4, in Prussia 3, in France 2 service battalions, beside depots to every regiment; in England, most regiments are formed, in peace, of but 1 battalion. Cavalry is divided into squadrons and regiments. The squadron from 100 to 200 men, forms the tactical and administrative unity; the English alone subdivide the squadron, for administrative purposes, into 2 troops. There are from 3 to 10 service squadrons to a regiment; the British have, in peace, but 3 squadrons, of about 120 horse; the Prussians 4 of 150 horse; the French 5 of 180 to 200 horse; the Austrians 6 or 8 of 200 horse; the Russians 6 to 10 of 150 to 170 horse. With cavalry the regiment is a body of tactical significance, as a regiment offers the means to make an independent charge, the squadrons mutually supporting each other, and is for this purpose formed of sufficient strength, viz., between 500 and 1,600 horse. The British alone have such weak regiments that they are obliged to put 4 or 5 of them to 1 brigade; on the other hand, the Austrian and Russian regiments in many cases are as strong as an average brigade. The French have nominally very strong regiments, but have hitherto appeared in the field in considerably reduced numbers, owing to their poverty in horses. Artillery is formed in batteries; the formation in regiments or brigades in this arm is only for peace purposes, as almost in every case of actual service the batteries are sure to become separated, and are always used so. Four guns is the least number, and the Austrians have 8; the French and English 6 guns per battery. Riflemen or other real light infantry are generally organized in battalions and companies only, not in regiments; the nature of the arm is repugnant to its reunion in large masses. The same is the case with sappers and miners, they being, beside, but a very small portion of the army. The French alone make an exception in this latter case; but their 3 regiments, sappers and miners, count only 6 battalions in all. With the regiment the formation of most armies in time of peace is generally considered complete. The larger bodies, brigades, divisions, army-corps, are mostly formed when war breaks out. The Russians and Prussians alone have their army fully organized and the higher commands filled up, as if for actual war. But in Prussia this is completely illusory, unless at least a whole army-corps be mobilized, which supposes the calling in of the landwehr of a whole province; and if in Russia the troops are actually with the regiments, yet the late war has shown that the original divisions and corps very soon got mixed, so that the advantage gained from such a formation is more for peace than for war. —In war, several battalions or squadrons are formed into a brigade; from 4 to 8 battalions for infantry, or from 6 to 20 squadrons for cavalry. With large cavalry regiments these latter may very well stand in lieu of brigade; but they are very generally reduced to smaller strength by the detachments they have to send to the divisions. Light and line infantry may with advantage be mixed in a brigade, but not light and heavy cavalry. The Austrians very generally add a battery to each brigade. A combination of brigades forms the division. In most armies, it is composed of all the 3 arms, say 2 brigades of infantry, 4 to 6 squadrons, and 1 to 3 batteries. The French and Russians have no cavalry to their divisions, the English form them of infantry exclusively. Unless, therefore, these nations wish to fight at a disadvantage, they are obliged to attach cavalry (and artillery respectively) to the divisions whenever the case occurs; which is easily overlooked or often inconvenient or impossible. The proportion of divisionary cavalry, however, is everywhere but small, and therefore the remainder of this arm is formed into cavalry divisions of 2 brigades each, for the purpose of reserve cavalry. Two or 3 divisions, sometimes 4, are, for larger armies, formed into an army-corps. Such a corps has everywhere its own cavalry and artillery, even where the divisions have none; and, where these latter are mixed bodies, there is still a reserve of cavalry and artillery placed at the disposal of the commander of the corps. Napoleon was the first to form these, and, not satisfied therewith, he organized the whole of the remaining cavalry into reserve cavalry-corps of 2 or 5 divisions of cavalry with horse-artillery attached. The Russians have retained this formation of their reserve cavalry, and the other armies are likely to take it up again in a war of importance, though the effect obtained has never yet been in proportion to the immense mass of horsemen thus concentrated on one point. Such is the modern organization of the fighting part of an army. But, in spite of the abolition of tents, magazines, field-bakeries, and bread-wagons, there is still a large train of non-combatants and of vehicles necessary to insure the efficiency of the army in a campaign. To give an idea of this, we will only state the train required, according to the existing regulations, for 1 army-corps of the Prussian service:—

Artillery train: 6 park columns of 80 wagons, 1 laboratory do., 6 wagons.

Pontoon train: 34 pontoon wagons, 5 tool wagons, 1 forge.

Infantry train: 116 wagons, 108 team horses.

Medical train: 50 wagons (for 1,600 or 2,000 sick).

Reserve commissariat train: 159 wagons.

Reserve train: 1 wagon, 75 reserve horses.

In all, 402 wagons, 1,791 horses, 8,000 men.

To enable the commanders of armies, army-corps and divisions to conduct, each in his sphere, the troops intrusted to him, a separate corps is formed in every army except the British, composed of officers exclusively, and called the staff. The functions of these officers are to reconnoitre and sketch the ground on which the army moves or may move; to assist in making out plans for operations, and to arrange them in detail so that no time is lost, no confusion arises, no useless fatigue is incurred by the troops. They are, therefore, in highly important positions, and ought to have a thoroughly finished military education, with a full knowledge of the capabilities of each arm on the march and in battle. They are accordingly taken in all countries from the most able subjects, and carefully trained in the highest military schools. The English alone imagine any subaltern or field-officer selected from the army at large is fit for such a position, and the consequence is that their staffs are inferior, and the army incapable of any but the slowest and simplest manœuvres, while the commander, if at all conscientious, has to do all the staff work himself. A division can seldom have more than one staff-officer attached, an army-corps has a staff of its own under the direction of a superior or a staff-officer, and an army has a full staff, with several generals, under a chief who, in urgent cases, gives his orders in the name of the commander. The chief of the staff, in the British army, has an adjutant-general and a quartermaster-general under his orders; in other armies the adjutant-general is at the same time chief of the staff; in France the chief of the staff unites both capacities in himself, and has a different department for each under his orders. The adjutant-general is the chief of the *personnel* of the army, receives the reports of all subordinate departments and bodies of the army, and arranges all matters relative to discipline, instruction, formation, equipment, armament, &c. All subordinates correspond through him with the commander-in-chief. If chief of the staff at the same time, he coöperates with the commander in the formation and working out of plans of operation and movements for the army. The proper arrangement of these in detail is the department of the quartermaster-general; the details of marches, cantonments, encampments, are prepared by him. A sufficient number of staff-officers are attached to head-quarters for reconnoitring the ground, preparing projects as to the defence or attack of positions, &c. There is, beside, a commander-in-chief of the artillery, and a superior engineer-officer for their respective departments; a few deputies to represent the chief of the staff on particular points of the battle-field, and a number of orderly officers and orderlies to carry orders and despatches. To the head-quarters are further attached the chief of the commissariat, with his clerks, the paymaster of the army, the chief of the medical department, and the judge-advocate, or director of the department of military justice. The staffs of the army-corps and divisions are regulated on the same model, but with greater simplicity and a reduced *personnel;* the staffs of brigades and regiments are still less numerous, and the staff of a battalion may consist merely of the commander, his adjutant, an officer as paymaster, a sergeant as clerk, and a drummer or bugleman. To regulate and keep up the military force of a great nation, numerous establishments, beside those hitherto named, are required. There are recruiting and remounting commissioners, the latter often connected with the administration of national establishments for the breeding of horses, military schools for officers and non-commissioned officers, model battalions, squadrons, and batteries, normal riding schools, and schools for veterinary surgeons. There are in most countries national founderies and manufactories for small arms and gunpowder; there are the various barracks, arsenals, stores, the fortresses with their equipments and the staff of officers commanding them; finally, there are the commissariat and general staff of the army, which, for the whole of the armed force, are even more numerous and have more expensive duties to perform than the staff and commissariat of a single active army. The staff especially has very important duties. It is generally divided into a historical section (collecting materials relative to the history of war, the formation of armies, &c., past and present), a topographical section (intrusted with the collection of maps and the trigonometrical survey of the whole country), a statistical section, &c. At the head of all these establishments, as well as of the army, stands the ministry of war, organized differently in different countries, but comprising, as must be evident from the preceding observations, a vast variety of subjects. As an example we give the organization of the French ministry of war. It comprises 7 directions or divisions: 1, of the *personnel;* 2, of the artillery; 3, of the engineers and fortresses; 4, of administrative affairs; 5, of Algeria; 6, war depôt (historical, topographical, &c., and sections of the staff); 7, finances of the war department. Immediately attached to the ministry are the following consultative commissions, composed of general and field-officers and professional men, viz.: the committees of the staff of infantry, of cavalry, of artillery, of fortification, of medical affairs, and the commissions for veterinary science and for public works. Such is the vast machinery devoted to recruiting, remounting, feeding, directing, and always reproducing a modern first class army. The masses brought together correspond to such an organization. Though Napoleon's grand army of 1812, when he had 200,000 men in Spain, 200,000 in France, Italy, Germany, and Poland, and invaded Russia with 450,000 men and 1,300 guns, has never yet been equalled; though we shall most likely never see such an army again united for one operation as these 450,000 men, yet the large continental states of Europe, Prussia included, can each of them raise an armed and disciplined force of 500,000 men, and more; and their armies, though not more than from 1½ to 3 per ct. of their population, have never yet been reached at any former period of history.—The system of the United States bases the defence of the country substantially on the militia of the different states, and on volunteer armies raised as occasion demands; the standing military force, employed mainly in preserving order among the Indian tribes of the West, consisting, according to the report of the secretary of war for 1857, of only about 18,000 men.

Arquebuse

ARQUEBUSE, sometimes, but incorrectly, written harquebuse, from the French *arquebuse*, and corrupted in English, particularly on the Scottish borders, into hagbut, or hackbut—the earliest form of the musket, which became really serviceable in the field for military purposes. So long ago as the battle of Bosworth, A. D. 1485, it was introduced under the name of a hand-gun, which was nothing more than a short iron cylinder closed with a *quasi*-breech at one end, and provided with a touch-hole, fastened to the end of a stout wooden pole, like the handle of a spear or halberd. This hand-gun or miniature cannon was loaded with slugs or small bullets upon a charge of coarse powder, and was discharged by means of a match applied to the vent, the instrument being supported on the shoulder of the front rank man, who was a pikeman or halberdier, and directed by means of the handle, and fired, though of course without any aim, by the rear rank. Even earlier than this, at the battle of Agincourt, according to Hall's chronicle, the Britons were armed "with fiery hand-guns." So clumsy, however, and slow of operation were these antique firearms, that, in spite of their formidable sound and unaccustomed appearance, they produced little or no effect. In the reign of Henry VIII., although during its earlier years, the battle of Pavia was won by the fire of the Spanish arquebusiers, the longbow still held its own as the superior weapon, in virtue of its accuracy of aim, its range, and penetration; and even in the reign of Elizabeth, the longbow is spoken of as "the queen of weapons," although she had musketeers in her army, and assisted Henry IV., of France, with a body of horse arquebusiers, commanded by Col. James, an ancestor of the well-known novelist. During her reign, this arm was greatly improved, although it was still so long and cumbersome that it could only be fired from a forked rest planted in the earth before the marksman, that indispensable instrument being sometimes furnished with a pike or halberd-head, so as, when set obliquely in the ground, to serve as a palisade. The barrels of these old pieces are extremely long, of very thick metal, usually small-bored, and sometimes, already, rifled; as is the case with the piece still preserved at Hamilton palace, in Scotland, with which the regent Murray was shot by Hamilton of Bothwellhaugh, in the year 1570. They were fired by means of a coil of match, or wick, of prepared hemp, passed through a hammer, like that of a modern firelock, which, being released by the pulling of the trigger, threw down the lighted match into the pan, and discharged the piece. In due time the matchlock gave way to the wheel-lock, in which the flint was fixed so as to be stationary, over the pan, and a toothed wheel, by means of a spring, was set in rapid motion against its edge, so as to project a shower of sparks into the powder below. To the wheel-lock succeeded the snaphance, as it was called. This was the first uncouth rudiment of the flint and steel lock, which was brought to such perfection by Joseph Manton, and which has only, within a few years, been entirely superseded by the percussion cap, than which it is not easy to imagine a quicker and more infallible instrument of ignition. The snaphance came into use for fine pistols, fowling-pieces, and choice musquetoons, during the English civil wars; but their rarity and high price kept them out of general use, except as the arms of gentlemen and officers of rank, while the matchlock still continued the weapon of the rank and file. It is remarkable that there has been far less advancement than one would have imagined, from the first invention of the improved arquebuse until very recent days, in the mere workmanship of the barrel and the accurate flight of the ball. The difficulty of aiming truly seems to have arisen solely from the defective method of firing, the clumsiness of the piece, and the extreme slowness of the ignition; for many arquebuse barrels of great antiquity, especially those of Spanish manufacture, having been altered to the percussion principle, new-stocked, and properly balanced, are found to shoot with great accuracy and even unusual penetration, at long ranges.

Artillery

ARTILLERY. The invention of gunpowder, and its application to throwing heavy bodies in a given direction, are now pretty generally conceded to have been of eastern origin. In China and India, saltpetre is the spontaneous excrescence of the soil, and, very naturally, the natives soon became acquainted with its properties. Fireworks made of mixtures of this salt with other combustible bodies were manufactured at a very early period in China, and used for purposes of war as well as for public festivities. We have no information at what time the peculiar composition of saltpetre, sulphur, and charcoal became known, the explosive quality of which has given it such an immense importance. According to some Chinese chronicles, mentioned by M. Paravey in a report made to the French academy in 1850, guns were known as early as 618 B. C.; in other ancient Chinese writings, fire-balls projected from bamboo tubes, and a sort of exploding shell, are described. At all events, the use of gunpowder and cannon for warlike purposes does not appear to have been properly developed in the earlier periods of Chinese history, as the first authenticated instance of their extensive application is of a date as late as 1232 of our era, when the Chinese, besieged by the Mongols in Kaï-fang-fu, defended themselves with cannon throwing stone balls, and used explosive shells, petards, and other fireworks based upon gunpowder.—The Hindoos appear to have had some sort of warlike fireworks as early as the time of Alexander the Great, according to the evidence of the Greek writers Ælian, Ctesias, Philostratus, and Themistius. This, however, certainly was not gunpowder, though saltpetre may have largely entered into its composition. In the Hindoo laws some sort of fire-arms appears to be alluded to; gunpowder is certainly mentioned in them, and, according to Prof. A. N. Wilson, its composition is described in old Hindoo medical works. The first mention of cannon, however, coincides pretty nearly with the oldest ascertained positive date of its occurrence in China. Chased's poems, about 1200, speak of fire-engines throwing balls, the whistling of which was heard at the distance of 10 coss (1,500 yards). About 1258 we read of fireworks on carriages belonging to the king of Delhi. A hundred years later the use of artillery was general in India; and when the Portuguese arrived there, in 1498, they found the Indians as far advanced in the use of fire-arms as they themselves were.—From the Chinese and Hindoos the Arabs received saltpetre and fireworks. Two of the Arabic names for saltpetre signify *China salt*, and *China snow*. Chinese red and white fire is mentioned by their ancient authors. Incendiary fireworks are also of a date almost contemporaneous with the great Arabic invasion of Asia and Africa. Not to mention the *maujanitz*, a somewhat mythical fire-arm said to have been known and used by Mohammed, it is certain that the Byzantine Greeks received the first knowledge of fireworks (afterward developed in the Greek fire) from their Arab enemies. A writer of the 9th century, Marcus Gracchus, gives a composition of 6 parts of saltpetre, 2 of sulphur, 1 of coal, which comes very near to the correct composition of gunpowder. The latter is stated with sufficient exactness, and first of all European writers, by Roger Bacon, about 1216, in his *Liber de Nullitate Magiæ*, but yet for fully a hundred years the western nations remained ignorant of its use. The Arabs, however, appear to have soon improved upon the knowledge they received from the Chinese. According to Conde's history of the Moors in Spain, guns were used, 1118, in the siege of Saragossa, and a culverin of 4 lb. calibre, among other guns, was cast in Spain in 1132. Abd-el-Mumen is reported to have taken Mohadia, near Bona, in Algeria, with fire-arms, in 1156, and the following year Niebla, in Spain, was defended against the Castilians with fire-machines throwing bolts and stones. If the nature of the engines used by the Arabs in the 12th century remains still to be investigated, it is quite certain that in 1280 artillery was used against Cordova, and that by the beginning of the 14th century its knowledge had passed from the Arabs to the Spaniards. Ferdinand IV. took Gibraltar by cannon in 1308. Baza in 1312 and 1328, Martos in 1326, Alicante in 1331, were attacked with artillery, and carcasses were thrown by guns in some of these sieges. From the Spaniards the use of artillery passed to the remaining European nations. The French, in the siege of Puy Guillaume in 1338, had guns, and in the same year the German knights in Prussia used them. By 1350, fire-arms were common in all countries of western, southern, and central Europe. That artillery is of eastern origin, is also proved by the manufacture of the oldest European ordnance. The gun was made of bars of wrought iron welded longitudinally together, and strengthened by heavy iron rings forced over them. It was composed of several pieces, the movable breech being fixed to the flight after loading. The oldest Chinese and Indian guns are made exactly in the same way, and they are as old, or older, than the oldest European guns. Both European and Asiatic cannon, about the 14th century, were of very inferior construction, showing artillery to have still been in its infancy. Thus, if it remains uncertain when the composition of gunpowder and its application to fire-arms were invented, we can at least fix the period when it first became an important engine in warfare; the very clumsiness of the guns of the 14th century, wherever they occur, proves their novelty as regular war-machines. The European guns of the 14th century were very unwieldy affairs. The large-calibred ones could only be moved by being taken to pieces, each piece forming a wagon-load. Even the small-calibred guns were exceedingly heavy, there being then no proper proportion established between the weight of the gun and that of the shot, nor between the shot and the charge. When they were brought into position, a sort of timber framework or scaffolding was erected for each gun to be fired from. The town of Ghent had a gun which, with the framework, measured 50 feet in length. Gun-carriages were still unknown. The cannons were mostly fired at very high elevations, like our mortars, and consequently had very little effect until shells were introduced. The projectiles were generally round shot of stone, for small calibres sometimes iron bolts. Yet, with all these drawbacks, cannon was not only used in sieges and the defence of towns, but in the field also, and on board ships of war. As early as 1386 the English took 2 French vessels armed with cannon. If the guns recovered from the Mary Rose (sunk 1545) may serve as a clue, those first ship guns were simply let into and secured in a log of wood hollowed out for the purpose, so as to be incapable of elevation.—In the course of the 15th century, considerable improvements were made, both in the construction and application of artillery. Cannon began to be cast of iron, copper, or brass. The movable breech was falling into disuse, the whole gun being cast of a piece. The best founderies were in France and Germany. In France, too, the first attempts were made to bring up and place guns under cover during a siege. About 1450 a sort of trench was introduced, and shortly after the first breeching batteries were constructed by the brothers Bureau, with the aid of which the king of France, Charles VII., retook in one year all the places the English had taken from him. The greatest improvements were, however, made by Charles VIII. of France. He finally did away with the movable breech, cast his guns of brass and in one piece, introduced trunnions, and gun-carriages on wheels, and had none but iron shot. He also simplified the calibres, and took the lighter regularly into the field. Of these, the double cannon was placed on a 4-wheeled carriage drawn by 35 horses; the remainder had 2-wheeled carriages, the trails dragging on the ground, and were drawn by from 24 down to 2 horses. A body of gunners was attached to each, and the service so organized as to constitute the first distinct corps of field artillery; the lighter calibres were movable enough to shift about with the other troops during action, and even to keep up with the cavalry. It was this new arm which procured to Charles VIII. his surprising successes in Italy. The Italian ordnance was still moved by bullocks; the guns were still composed of several pieces, and had to be placed on their frames when the position was reached; they fired stone shot, and were altogether so clumsy that the French fired a gun oftener in an hour than the Italians could do in a day. The battle of Fornovo (1495), gained by the French field artillery, spread terror over Italy, and the new arm was considered irresistible. Macchiavelli's *Arte della Guerra* was written expressly, in order to indicate means to counteract its effect by the skilful disposition of the infantry and cavalry. The successors of Charles VIII., Louis XII. and Francis I., continued to improve and lighten their field artillery. Francis organized the ordnance as a distinct department, under a grand-master of the ordnance. His field-guns broke the hitherto invincible masses of the Swiss pikemen at Marignano, 1515, by rapidly moving from one flanking position to another, and thus they decided the battle. The Chinese and Arabs knew the use and manufacture of shells, and it is probable that from the latter this knowledge passed to the European nations. Still, the adoption of this projectile, and of the mortar from which it is now fired, did not take place in Europe before the second half of the 15th century, and is commonly ascribed to Pandolfo Malatesta, prince of Rimia. The first shells consisted of 2 hollow metal hemispheres screwed together, the art of casting them hollow was of later invention.—The emperor Charles V., was not behind his French rivals in the improvement of field-guns. He introduced limbers, thus turning the two-wheeled gun, when it had to be moved, into a 4-wheeled vehicle capable of going at a faster pace and of surmounting obstacles of ground. Thus his light guns, at the battle of Rémi in 1554, could advance at a gallop.—The first theoretical researches, respecting gunnery and the flight of projectiles, also fall in this period. Tartaglia, an Italian, is said to be the discoverer of the fact that the angle of elevation of 45° gives, *in vacuo*, the greatest range. The Spaniards Collado and Ufano also occupied themselves with similar inquiries. Thus the theoretical foundations for scientific gunnery were laid. About the same time Vannocci Biringoccio's inquiries into the art of casting (1540) produced considerable progress in the manufacture of cannon, while the invention of the calibre scale by Hartmann, by which every part of a gun was measured by its proportion to the diameter of bore, gave a certain standard for the construction of ordnance, and paved the way for the introduction of fixed theoretical principles, and of general experimental rules.—One of the first effects of the improved artillery was a total change in the art of fortification. Since the time of the Assyrian and Babylonian monarchies, that art had made but little progress. But now the new fire-arm everywhere made a breach on the masonry walls of the old system, and a new plan had to be invented. The defences had to be constructed so as to expose as little masonry as possible to the direct fire of the besieger, and to admit of a strong artillery being placed on the ramparts. The old masonry wall was replaced by an earthwork rampart, only faced with masonry, and the small flanking town was turned into a large pentagonal bastion. Gradually the whole of the masonry used in fortification was covered against direct fire by outlying earthworks, and by the middle of the 17th century the defence of a fortified place became once more relatively stronger than the attack, until Vauban again gave the ascendant to the latter. Hitherto the operation of loading had been carried on with loose powder shovelled into the gun. About 1600 the introduction of cartridges, cloth bags containing the prescribed quantity of powder, much abridged the time necessary for loading, and insured greater precision of fire by greater equality of charge. Another important invention was made about the same time, that of grape-shot and case-shot. The construction of field-guns, adapted for throwing hollow shot, also belongs to this period. The numerous sieges occurring during the war of Spain against the Netherlands contributed very much to the improvement of the artillery used in the defence and attack of places, especially as regards the use of mortars and howitzers, of shells, carcasses, and red-hot shot, and the composition of fuzes and other military fireworks. The calibres in use in the beginning of the 17th century were still of all sizes, from the 48-pounder to the smallest falconets bored for balls of ½ lb. weight. In spite of all improvements, field artillery was still so imperfect that all this variety of calibre was required to obtain something like the effect we now realize with a few middle-sized guns between the 6-pounder and the 12-pounder. The light calibres, at that time, had mobility, but no effect; the large calibres had effect, but no mobility; the intermediate ones had neither the one nor the other in a degree sufficient for all purposes. Consequently, all calibres were maintained, and jumbled together in one mass, each battery consisting generally of a regular assortment of cannon. The elevation was given to the piece by a quoin. The carriages were still clumsy, and a separate model was of course required for each calibre, so that it was next to impossible to take spare wheels and carriages into the field. The axletrees were of wood, and of a different size for each calibre. In addition to this, the dimensions of the cannon and carriages were not even the same for one single calibre, there being everywhere a great many pieces of old construction, and many differences of construction, in the several workshops of a country. Cartridges were still confined to guns in fortresses; in the field the cannon was loaded with loose powder, introduced on a shovel, upon which a wad and the shot were rammed down. Loose powder was equally worked down the touchhole, and the whole process was extremely slow. The gunners were not considered regular soldiers, but formed a guild of their own, recruiting themselves by apprentices, and sworn not to divulge the secrets and mysteries of their handicraft. When a war broke out, the belligerents took as many of them into their service as they could get, over and above their peace establishment. Each of these gunners or bombardiers received the command of a gun, had a saddle-horse, and apprentice, and as many professional assistants as he required, beside the requisite number of men for shifting heavy pieces. Their pay was fourfold that of a soldier. The horses of the artillery were contracted for when a war broke out; the contractor also found harness and drivers. In battle the guns were placed in a row in front of the line, and unlimbered; the horses were taken out of the shafts. When an advance was ordered, the limbers were horsed, and the guns limbered up; sometimes the lighter calibres were moved, for short distances, by men. The powder and shot were carried in separate carts; the limbers had not yet any boxes for ammunition. Manœuvring, loading, priming, pointing, and firing, were all operations of great slowness, according to our present notions, and the number of hits, with such imperfect machinery, and the almost total want of science in gunnery, must have been small indeed. The appearance of Gustavus Adolphus in Germany, during the 30 years' war, marks an immense progress in artillery. This great warrior did away with the extremely small calibres, which he replaced, first, by his so-called leather guns, light wrought-iron tubes covered with ropes and leather. These were intended to fire grape-shot only, which thus was first introduced into field warfare. Hitherto its use had been confined to the defence of the ditch in fortresses. Along with grape and case shot, he also introduced cartridges in his field artillery. The leather guns not proving very durable, were replaced by light cast-iron 4-pounders, 16 calibres long, weighing 6 cwt. with the carriage, and drawn by two horses. Two of these pieces were attached to each regiment of infantry. Thus the regimental artillery which was preserved in many armies up to the beginning of this century, arose by superseding the old small calibred, but comparatively clumsy guns, and was originally intended for case shot only, though very soon it was also made to fire round shot. The heavy guns were kept distinct, and formed into powerful batteries occupying favorable positions on the wings or in front of the centre of the army. Thus by the separation of the light from the heavy artillery, and by the formation of batteries, the tactics of field artillery were founded. It was General Torstenson, the inspector-general of the Swedish artillery, who mainly contributed to these results by which field artillery now first became an independent arm, subject to distinct rules of its own for its use in battle. Two further important inventions were made about this time: about 1650, that of the horizontal elevating screw, as it was used until Gribeauval's times, and about 1697, that of tubes filled with powder for priming, instead of working powder into the touchhole. Both pointing and loading became much facilitated thereby. Another great improvement was the invention of the prolonge, for manœuvring at short distances. The number of guns carried into the field during the 17th century, was very large. At Greifenhagen, Gustavus Adolphus had 80 pieces with 20,000 men, and at Frankfort-on-the-Oder, 200 pieces with 18,000 men. Artillery trains of 100 to 200 guns were of very common occurrence during the wars of Louis XIV. At Malplaquet, nearly 300 pieces of cannon were employed on both sides; this was the largest mass of artillery hitherto brought together on a single field of battle. Mortars were very generally taken into the field about this time. The French still maintained their superiority in artillery. They were the first to do away with the old guild system and enrol the gunners as regular soldiers, forming, in 1671, a regiment of artillery, and regulating the various duties and ranks of the officers. Thus this branch of service was recognized as an independent arm, and the education of the officers and men was taken in hand by the state. An artillery school, for at least 50 years the only one in existence, was founded in France in 1690. A hand-book of artilleristic science, very good for the time, was published in 1697 by Saint Rémy. Still the secrecy surrounding the "mystery" of gunnery was so great that many improvements adopted in other countries were as yet unknown in France, and the construction and composition of every European artillery differed widely from any other. Thus the French had not yet adopted the howitzer, which had been invented in Holland and adopted in most armies before 1700. Limber boxes for ammunition, first introduced by Maurice of Nassau, were unknown in France, and indeed but little adopted. The gun, carriage, and limber were too heavy to admit of their being encumbered with the extra weight of ammunition. The very small calibres, up to 8 lbs. inclusive, had indeed been done away with, but the light regimental artillery was unknown in France. The charges used in the artillery of the times hitherto considered were, for guns, generally very heavy; originally equal in weight to the ball. Although the powder was of inferior quality, these charges were still far stronger in effect than those now in use, thus they were one of the chief causes of the tremendous weight of the cannon. To resist such charges the weight of a brass cannon was often from 250 to 400 times the weight of the shot. Gradually, however, the necessity of lightening the guns compelled a reduction of the charge, and about the beginning of the 18th century, the charge was generally only one-half the weight of the shot. For mortars and howitzers the charge was regulated by the distance, and generally very small. The end of the 17th and beginning of the 18th century was the period in which the artillery was in most countries finally incorporated in the army, deprived of its mediæval character of a guild, recognized as an arm, and thus enabled to take a more regular and rapid development. The consequence was an almost immediate and very marked progress. The irregularity and variety of calibres and models, the uncertainty of all existing empirical rules, the total want of well-established principle, now became evident and unbearable. Accordingly, experiments were everywhere made on a large scale to ascertain the effects of calibres, the relations of the calibre to the charge and to the weight and length of the gun, the distribution of metal in the cannon, the ranges, the effects of recoil on the carriages, &c. Between 1730 and 1740, Bélidor directed such experiments at La Fère in France, Robius in England, and Papacino d'Antoni at Turin. The result was a great simplification of the calibres, a better distribution of the metal of the gun, and a very general reduction of the charges, which were now between ⅓ and ½ the weight of the shot. The progress of scientific gunnery went side by side with these improvements. Galileo had originated the parabolic theory, Torricelli his pupil, Anderson, Newton, Blondel, Bernouilli, Wolff, and Euler, occupied themselves with further determining the flight of projectiles, the resistance of the air, and the causes of their deviations. The above-named experimental artillerists also contributed materially to the advancement of the mathematical portion of gunnery. Under Frederic the Great the Prussian field artillery was again considerably lightened. The short, light, regimental guns, not more than 14, 16, or 18 calibres long, and weighing from 80 to 150 times the weight of the shot, were found to have a sufficient range for the battles of those days, decided principally by infantry fire. Accordingly, the king had all his 12-pounders cast the same proportional length and weight. The Austrians, in 1753, followed this example, as well as most other states; but Frederic himself, in the latter part of his reign, again provided his reserve artillery with long powerful guns, his experience at Leuthen having convinced him of their superior effects. Frederic the Great introduced a new arm by mounting the gunners of some of his batteries, and thus creating horse artillery, destined to give the same support to cavalry as foot-artillery did to infantry. The new arm proved extremely effective, and was very soon adopted by most armies; some, as the Austrians, mounting the gunners in separate wagons as a substitute. The proportion of guns with the armies of the 18th century was still very large. Frederic the Great had, in 1756, with 70,000 men 206 guns, 1762 with 67,000 men 275 guns, 1778 with 180,000 men 811 guns. These guns, with the exception of the regimental ones which followed their battalions, were organized in batteries of various sizes from 6 to 20 guns each. The regimental guns advanced with the infantry, while the batteries were firing from chosen positions, and sometimes advanced to a second position, but here they generally awaited the issue of the battle; they left, as regards mobility, still very much to be desired, and at Kunersdorf, the loss of the battle was due to the impossibility of bringing up the artillery in the decisive moment. The Prussian general, Tempelhof, also introduced field-mortar batteries, the light mortars being carried on the backs of mules; but they were soon again abolished after their uselessness had been proved in the war of 1792 and '93. The scientific branch of artillery was, during this period, cultivated especially in Germany. Struensee and Tempelhof wrote useful works on the subject, but Scharnhorst was the leading artilleryman of his day. His handbook of artillery is the first comprehensive really scientific treatise on the subject, while his hand-book for officers, published as early as 1787, contains the first scientific development of the tactics of field artillery. His works, though antiquated in many respects, are still classical. In the Austrian service, Gen. Vega, in the Spanish, Gen. Morla, in the Prussian, Hoyer and Rouvroy, made valuable contributions to artilleristic literature. The French had reorganized their artillery according to the system of Valière in 1732; they retained 24, 16, 12, 8, and 4-pounders, and adopted the 8-inch howitzer. Still there was a great variety of models of construction; the guns were from 22 to 26 calibres long, and weighed about 250 times as much as the corresponding shot. At length, in 1774, General Gribeauval, who had served with the Austrians in the 7 years' war, and who knew the superiority of the new Prussian and Austrian artilleries, carried the introduction of his new system. The siege artillery was definitively separated from the field artillery. It was formed of all guns heavier than 12-pounders, and of all the old heavy 12-pounder guns. The field artillery was composed of 12-pounder, 8-pounder, and 4-pounder guns, all 18 calibres long, weighing 150 times the weight of the shot, and of a 6-inch howitzer. The charge for the guns was definitely fixed at one-third the weight of the shot, the perpendicular elevating screw was introduced, and every part of a gun or carriage was made according to a fixed model, so as to be easily replaced from the stores. Seven models of wheels, and 3 models of axletrees, were sufficient for all the various vehicles used in the French artillery. Although the use of limber-boxes to carry a supply of ammunition was known to most artillerists, Gribeauval did not introduce them in France. The 4-pounders were distributed with the infantry, every battalion receiving 2 of them; the 8 and 12-pounders were distributed in separate batteries as reserve artillery, with a field-forge to every battery. Train and artisan companies were organized, and altogether this artillery of Gribeauval was the first corps of its kind established on a modern footing. It has proved superior to any of its day, in the proportions by which its constructions were regulated, in its material, and in its organization, and for many years it has served as a model. Thanks to Gribeauval's improvements, the French artillery, during the wars of the revolution, was superior to any other, and soon became, in the hands of Napoleon, an arm of hitherto unknown power. There was no alteration made, except that the system of regimental guns was definitively done away with in 1799, and that with the immense number of 6-pounder and 8-pounder guns conquered in all parts of Europe, these calibres were also introduced in the service. The whole of the field artillery was organized into batteries of 6 pieces, among which one was generally a howitzer, and the remainder guns. But if there was little or no change in the material, there was an immense one in the tactics of artillery. Although the number of guns was somewhat diminished in consequence of the abolition of regimental pieces, the effect of artillery in a battle was heightened by its skilful use. Napoleon used a number of light guns, attached to the divisions of infantry, to engage battle, to make the enemy show his strength, &c., while the mass of the artillery was held in reserve, until the decisive point of attack was determined on; then enormous batteries were suddenly formed, all acting upon that point, and thus preparing by a tremendous cannonade the final attack of the infantry reserves. At Friedland 70 guns, at Wagram 100 guns, were thus formed in line; at Borodino, a battery of 80 guns prepared Ney's attack on Semenovka. On the other hand, the large masses of reserve cavalry formed by Napoleon, required for their support a corresponding force of horse artillery, which arm again received the fullest attention, and was very numerously represented in the French armies, where its proper tactical use was first practically established. Without Gribeauval's improvements, this new use of artillery would have been impossible, and with the necessity for the altered tactics, these improvements gradually, and with slight alterations, found their way into all continental armies.—The British artillery, about the beginning of the French revolutionary war, was exceedingly neglected, and much behind that of other nations. They had two regimental guns to each battalion, but no reserve artillery. The guns were horsed in single team, the drivers walking alongside with long whips. Horses and drivers were hired. The *materiel* was of very old-fashioned construction, and except for very short distances, the pieces could move at a walk only. Horse artillery was unknown. After 1800, however, when experience had shown the inadequacy of this system, the artillery was thoroughly reorganized by Major Spearman. The limbers were adapted for double team, the guns brigaded in batteries of 6 pieces, and in general those improvements were introduced which had been in use for some time already on the continent. No expense being spared, the British artillery soon was the neatest, most solidly, and most luxuriously equipped of its kind; great attention was paid to the newly erected corps of horse artillery, which soon distinguished itself by the boldness, rapidity, and precision of its manœuvres. As to fresh improvements in the *materiel*, they were confined to the construction of the vehicles; the block-tail gun-carriage, and the ammunition wagon with a limber to it have since been adopted in most countries of the continent.—The proportion of artillery to the other components of an army became a little more fixed during this period. The strongest proportion of artillery now present with an army was that of the Prussians at Pirmasens—7 guns for every 1,000 men. Napoleon considered 8 guns per 1,000 men quite sufficient, and this proportion has become a general rule. The number of rounds to accompany a gun was also fixed; at least 200 rounds per gun, of which $\frac{1}{4}$ or $\frac{1}{3}$ were case shot. During the peace following the downfall of Napoleon, the artilleries of all European powers underwent gradual improvements. The light calibres of 8 and 4 lbs. were everywhere abolished, the improved carriages and wagons of the English artillery were adopted in most countries. The charge was fixed almost everywhere at $\frac{1}{3}$, the metal of the gun at, or near, 150 times the weight of the shot, and the length of the piece at from 16 to 18 calibres. The French reorganized their artillery in 1827. The field-guns were fixed at 8 and 12 lb. calibre, 18 calibres long, charge $\frac{1}{3}$ weight of metal in gun 150 times that of the shot. The English carriages and wagons were adopted, and limber-boxes for the first time introduced into the French service. Two kinds of howitzers, of 15 and 16 centimetres of bore, were attached to the 8 and 12-pounder batteries, respectively. A great simplicity distinguishes this new system of field artillery. There are but 2 sizes of gun-carriages, 1 size of limber, 1 size of wheel, and 2 sizes of axletrees to all the vehicles used in the French field batteries. Beside this, a separate mountain artillery was introduced, carrying howitzers of 12 centimetres bore.—The English field artillery now has for its almost exclusive calibre the 9-pounders of 17 calibres long, weight $1\frac{1}{2}$ cwt. to 1 pound weight of shot, charge $\frac{1}{3}$ the weight of shot. In every battery there are 2 24-pounder $5\frac{1}{2}$-inch howitzers. Six-pounder and 12-pounder guns were not sent out at all in the late Russian war. There are 2 sizes of wheels in use. In both the English and French foot artillery the gunners are mounted during manœuvres on the limber and ammunition wagons.—The Prussian army carries 6 and 12-pounder guns, 18 calibres long, weighing 145 times, and charged with $\frac{1}{3}$ the weight of the shot. The howitzers are $5\frac{1}{2}$ and $6\frac{1}{2}$-inch bore. There are 6 guns and 2 howitzers to a battery. There are 2 wheels and 2 axletrees, and 1 limber. The gun-carriages are of Gribeauval construction. In the foot artillery, for quick manœuvres, 5 gunners, sufficient to serve the gun, mount the limber-box and the off-horses; the remaining 3 follow as best they can. The ammunition wagons are not, therefore, attached to the guns, as in the French and British service, but form a column apart, and are kept out of range during action. The improved English ammunition wagon was adopted in 1842. —The Austrian artillery has 6 and 12-pounder guns, 16 calibres long, weighing 135 times, charged with $\frac{1}{4}$ the weight of the shot. The howitzers are similar to those of the Prussian service. Six guns and 2 howitzers compose a battery.—The Russian artillery has 6 and 12-pounder guns, 18 calibres long, 150 times the weight of the shot, with a charge of $\frac{1}{3}$ its weight. The howitzers are 5 and 6-inch bore. According to the calibre and destination, either 8 or 12 pieces form a battery, one-half of which are guns, and the other half howitzers. —The Sardinian army has 8-pounder and 16-pounder guns, with a corresponding size of howitzer. The smaller German armies all have 6 and 12-pounders, the Spaniards 8 and 12-pounders, the Portuguese, Swedes, Danes, Belgians, Dutch, and Neapolitans 6 and 12-pounders.—The start given to the British artillery by Major Spearman's reorganization, along with the interest for further improvement thereby awakened in that service, and the wide range offered to artilleristic progress by the immense naval artillery of Great Britain, have contributed to many important inventions. The British compositions for fireworks, as well as their gunpowder, are superior to any other, and the precision of their time fuzes is unequalled. The principal invention latterly made in the British artillery are the shrapnel shells (hollow shot, filled with musket balls, and exploding during the flight), by which the effective range of grape has been rendered equal to that of round shot. The French, skilful as they are as constructors and organizers, are nearly the only army which has not yet adopted this new and terrible projectile; they have not been able to make out the fuze composition, upon which every thing depends.—A new system of field artillery has been proposed by Louis Napoleon, and appears to be in course of adoption in France. The whole of the 4 calibres of guns and howitzers now in use, to be superseded by a light 12-pounder gun, 15½ calibres long, weighing 110 times, and charged with ¼ the weight of the solid shot. A shell of 12 centim. (the same now used in the mountain artillery), to be fired out of the same gun with a reduced charge, thus superseding howitzers for the special use of hollow shot. The experiments made in 4 artillery schools of France have been very successful, and it is said that these guns showed a marked superiority, in the Crimea, over the Russian guns, mostly 6-pounders. The English, however, maintain that their long 9-pounder is superior in range and precision to this new gun, and it is to be observed that they were the first to introduce, but very soon again to abandon, a light 12-pounder for a charge of ¼ the shot's weight, and which has evidently served Louis Napoleon as a model. The firing of shells from common guns is taken from the Prussian service, where, in sieges, the 24-pounders are made to fire shells for certain purposes. Nevertheless, the capabilities of Louis Napoleon's gun have still to be determined by experience, and as nothing special has been published on its effects in the late war, we cannot here be expected finally to judge on its merits.—The laws and experimental maxims for propelling solid, hollow, or other projectiles, from cannon, the ascertained proportions of range, elevation, charge, the effects of windage and other causes of deviation, the probabilities of hitting the mark, and the various circumstances that may occur in warfare, constitute the science of gunnery. Though the fact, that a heavy body projected *in vacuo*, in a direction different from the vertical, will describe a parabola in its flight, forms the fundamental principle of this science, yet the resistance of the air, increasing as it does with the velocity of the moving body, alters very materially the application of the parabolic theory in gunnery practice. Thus for guns propelling their shot at an initial velocity of 1,400 to 1,700 feet in a second, the line of flight varies considerably from the theoretic parabola, so much so that with them, the greatest range is obtained at an elevation of only about 20 degrees, while according to the parabolic theory it should be at 45 degrees. Practical experiments have determined, with some degree of precision, these deviations, and thus fixed the proper elevations for each class of guns, for a given charge and range. But there are other circumstances affecting the flight of the shot. There is, first of all, the windage, or the difference by which the diameter of the shot must be less than that of the bore, to facilitate loading. It causes first an escape of the expanding gas during the explosion of the charge, in other words, a reduction of the force, and secondly an irregularity in the direction of the shot, causing deflections in a vertical, or horizontal sense. Then there is the unavoidable inequality in the weight of the charge, or in its condition at the moment it is used, the eccentricity of the shot, the centre of gravity not coinciding with the centre of the sphere, which causes deflections varying according to the relative position of the centres at the moment of firing, and many other causes producing irregularity of results under seemingly the same conditions of flight. For field-guns, we have seen that the charge of ⅓ of the shot's weight, and a length of 16–18 calibres are almost universally adopted. With such charges, the point-blank range (the gun being laid horizontal), the shot will touch the ground at about 300 yards distance, and by elevating the gun, this range may be increased up to 3,000 or 4,000 yards. Such a range, however, leaves all probability of hitting the mark out of the question, and for actual and effective practice, the range of field-guns does not exceed 1,400 or 1,500 yards, at which distance scarcely 1 shot out of 6 or 8 might be expected to hit the mark. The decisive ranges, in which alone cannon can contribute to the issue of a battle, are, for round shot and shell, between 600 and 1,100 yards, and at these ranges the probability of striking the object is indeed far greater. Thus it is reckoned that at 700 yards about 50 per cent., at 900 yards about 35 per cent., at 1,100 yards 25 per cent. out of the shots fired from a 6-pounder, will hit a target representing the front of a battalion in column of attack (34 yards long by 2 yards high). The 9 and 12-pounder will give somewhat better results. In some experiments made in France in 1850, the 8-pounders and 12-pounders then in use gave the following results, against a target 30 metres by 3 metres (representing a troop of cavalry) at:—

	500 met.	600 met.	700 met.	800 met.	900 met.
12-p'ders, hits,	64 p.ct.	54 p.ct.	43 p.ct.	37 p.ct.	32 p.ct.
8-p'ders, "	67 "	44 "	40 "	28 "	28 "

Though the target was higher by one-half, the practice here remained below the average stated above. With field-howitzers the charge is considerably less in proportion to the weight of the projectile than with guns. The short length of the piece (7 to 10 calibres) and the necessity of firing it at great elevations, are the causes of this. The recoil from a howitzer fired under high elevation, acting downward as well as backward, would, if a heavy charge was used, strain the carriage so as to disable it after a few rounds. This is the reason why in most continental artilleries several charges are in use in the same field-howitzer, thus making the gunner to produce a given range by different combination of charge and elevation. Where this is not the case, as in the British artillery, the elevation taken is necessarily very low, and scarcely exceeding that of guns; the range-tables for the British 24-pounder howitzer, 2½-pound charge, do not extend beyond 1,050 yards, with 4° elevation; the same elevation, for the 9-pounder gun, giving a range of 1,400 yards. There is a peculiar short kind of howitzer in use in most German armies, which is capable of an elevation of from 16 to 20 degrees, thus acting somewhat like a mortar; its charge is, necessarily, but small; it has this advantage over the common, long howitzer, that its shells can be made to drop into covered positions, behind undulations of ground, &c. This advantage is, however, of a doubtful nature against movable objects like troops, though of great importance where the object covered from direct fire is immovable; and as to direct fire, these howitzers, from their shortness (16 to 7 calibres) and small charge, are all but useless. The charge, to obtain various ranges at an elevation fixed by the purpose intended (direct firing or shelling), necessarily varies very much; in the Prussian field artillery, where these howitzers are still used, not less than twelve different charges occur. Withal, the howitzer is but a very imperfect piece of cannon, and the sooner it is superseded by an effective field shell-gun, the better.—The heavy cannon used in fortresses, sieges, and naval armaments, are of various description. Up to the late Russian war, it was not customary to use in siege-warfare heavier guns than 24-pounders, or, at the very outside, a few 82-pounders. Since the siege of Sebastopol, however, siege-guns and ship-guns are the same, or, rather, the effect of the heavy ship-guns in trenches and land-defences has proved so unexpectedly superior to that of the customary light siege-guns, that the war of sieges will henceforth have to be decided, in a great measure, by such heavy naval cannon. In both siege and naval artillery, there are generally found various models of guns for the same calibre. There are light and short guns, and there are long and heavy ones. Mobility being a minor consideration, guns for particular purposes are often made 22 to 25 calibres long, and some of these are, in consequence of this greater length, as precise as rifles in their practice. One of the best of this class of guns, is the Prussian brass 24-pounder of 10 feet 4 inches, or 22 calibres long, weighing 60 cwt.; for dismounting practice in a siege, there is no gun like it. For most purposes, however, a length of 16 to 20 calibres is found quite sufficient, and as, upon an average, size of calibre will be preferable to extreme precision, a mass of 60 cwt. of iron or gun-metal will be more usefully employed, as a rule, in a heavy 82-pounder of 16–17 calibres long. The new long iron 32-pounder, one of the finest guns in the British navy, 9 feet long, 50 cwt., measures but 16⅓ calibres. The long 68-pounder, 112 cwt., pivot-gun of all the large screw 131 gun-ships, measures 10 feet 10 inches, or a trifle more than 16 calibres; another kind of pivot-gun, the long 56-pounder of 98 cwt., measures 11 feet, or 17⅓ calibres. Still a great number of less effective guns enter into naval armaments even now, bored-up guns of merely 11 or 12 calibres, and carronades of 7–8 calibres long. There is, however, another kind of naval gun that was introduced about 35 years ago by General Paixhans, and has since received an immense importance, the shell-gun. This kind of ordnance has undergone considerable improvement, and the French shell-gun still comes nearest to that constructed by the inventor; it has retained the cylindrical chamber for the charge. In the English service the chamber is either a short frustum of a cone, reducing only very slightly the diameter of the bore, or there is no chamber at all; it measures in length from 10 to 13 calibres, and is intended for hollow shot exclusively; but the long 68-pdrs. and 56-pdrs. mentioned above throw solid shot and shell indiscriminately. In the U. S. navy Capt. Dahlgren has proposed a new system of shell-guns, consisting of short guns of very large calibre (11 and 9 inches bore), which has been partly adopted in the armament of several new frigates. The value of this system has still to be fixed by actual experience, which must determine whether the tremendous effect of such enormous shells can be obtained without the sacrifice of precision, which cannot but suffer from the great elevation required at long ranges. In sieges and naval gunnery, the charges are as variable as the constructions of the guns themselves, and the ends to be attained. In laying a breach in masonry, the heaviest charges are used, and these amount, with some very heavy and solid guns, to one-half the weight of the shot. On the whole, however, one-fourth may be considered a full average charge for siege purposes, increased sometimes to one-third, diminished at others to one-sixth. On board ship, there are generally 3 classes of charges to each gun; the high charge, for distant practice, chasing, &c., the medium charge, for the average effective distances of naval engagements; the reduced, for close quarters and double shotting. For the long 82-pdrs. they are equal to $\frac{5}{16}$, $\frac{1}{4}$, and $\frac{3}{16}$ of the shot's weight. For short light guns and shell-guns, these proportions are of course still more reduced; but with the latter, too, the hollow shot does not reach the weight of the solid one. Beside guns and shell-guns, heavy howitzers and mortars enter into the composition of siege and naval artillery. Howitzers are short pieces intended to throw shell at an elevation up to 12 or 30 degrees, and to be fixed on carriages; mortars are still shorter pieces, fixed to blocks, intended to throw shell at an elevation generally exceeding 20 degrees, and increasing even to 60 degrees. Both are chambered ordnance; *i. e.* the chamber or part of the bore intended to receive the charge, is less in diameter than the flight or general bore. Howitzers are seldom of a calibre exceeding 8 inches, but mortars are bored up to 13, 15, and more inches. The flight of a shell from a mortar, from the smallness of the charge (1-20th to 1-40th of the weight of the shell), and from its considerable elevation, is less interfered with by the resistance of the air, and here the parabolic theory may be used in gunnery calculations without material deviation from practical results. Shells from mortars are intended to act either by bursting, and, as carcasses, setting fire to combustible objects by the jet of flame from the fuzes, or by their weight as well, in breaking through vaulted and otherwise secured roofs; in the latter case the higher elevation is preferred, giving the highest flight and greatest momentum of fall. Shells from howitzers are intended to act, first by impact, and afterward by bursting. From their great elevation, and the small initial velocity imparted to the shell, and consequent little resistance offered to it by the air, a mortar throws its projectile further than any other kind of ordnance, the object fired at being generally a whole town, there is little precision required; and thus it happens that the effective range of heavy mortars extends to 4,000 yards and upward, from which distance Sveaborg was bombarded by the Anglo-French mortar-boats.—The application of these different kinds of cannon, projectiles, and charges, during a siege, will be treated of under that head; the use of naval artillery constitutes nearly the whole fighting part of naval elementary tactics, and does therefore not belong to this subject; it thus only remains for us to make a few observations on the use and tactics of field artillery.—Artillery has no arms for hand-to-hand fight; all its forces are concentrated in the distant effect of its fire. It is, moreover, in fighting condition as long only as it is in position; as soon as it limbers up, or attaches the prolonge for a movement, it is temporarily disabled. From both causes, it is the most defensive of all the 3 arms; its powers of attack are very limited indeed, for attack is onward movement, and its culminating point is the clash of steel against steel. The critical moment for artillery is therefore the advance, taking position, and getting ready for action under the enemy's fire. Its deployments into line, its preliminary movements, will have to be masked either by obstacles of ground or by lines of troops. It will thus gain a position parallel to the line it has to occupy, and then advance into position straight against the enemy, so as not to expose itself to a flanking fire. The choice of a position is a thing of the highest importance, both as regards the effect of the fire of a battery, and that of the enemy's fire upon it. To place his guns so that their effect on the enemy is as telling as possible, is the first important point; security from the enemy's fire the second. A good position must afford firm and level standing ground for the wheels and trails of the guns; if the wheels do not stand level, no good practice is possible; and if the trail digs into the ground, the carriage will soon be broken by the power of recoil. It must, beside, afford a free view of the ground held by the enemy, and admit of as much liberty of movement as possible. Finally, the ground in front, between the battery and the enemy, must be favorable to the effect of our arms, and unfavorable, if possible, to that of theirs. The most favorable ground is a firm and level one, affording the advantage of ricochet practice, and making the shot that go short strike the enemy after the first graze. It is wonderful what difference the nature of the ground will make in artillery practice. On soft ground the shot, on grazing, will deflect or make irregular rebounds, if they do not stick fast in it at once. The way the furrows run in ploughed land, makes a great difference, especially with canister and shrapnell firing; if they run crossways, most of the shot will bury themselves in them. If the ground be soft, undulating, or broken immediately in front of us, but level and hard further on toward the enemy, it will favor our practice, and protect us from his. Firing down or up inclinations of more than 5 degrees, or firing from the top of one hill to that of another, is very unfavorable. As to our safety from the enemy's fire, very small objects will increase that. A thin fence, scarcely hiding our position, a group of shrubs, or high corn, will prevent his taking correct aim. A small abrupt bank on which our guns are placed will catch the most dangerous of his projectiles. A dyke makes a capital parapet, but the best protection is the crest of a slight undulation of ground, behind which we draw our guns so far back that the enemy sees nothing but the muzzles; in this position every shot striking the ground in front, will bound high over our heads. Still better is it, if we can cut out a stand for our guns into the crest, about 2 feet deep, flattening out to the rear with the slope, so as to command the whole of the external slope of the hill. The French under Napoleon were extremely skilful in placing their guns, and from them all other nations have learnt this art. Regarding the enemy, the position should be chosen so as to be free from flank or enfilading fire; regarding our own troops, it should not hamper their movements. The usual distance from gun to gun in line is 20 yards, but there is no necessity to adhere strictly to any of these rules of the parade-ground. Once in position, the limbers remain close behind their guns, while the wagons, in some services, remain under cover. Where the wagons are used for mounting the men, they too must run the chance of going into effective range. The battery directs its fire upon that portion of the enemy's forces which at the time most menaces our position; if our infantry is to attack, it fires upon either the opposing artillery, if that is yet to be silenced, or upon the masses of infantry if they expose themselves; but if a portion of the enemy advance to actual attack, that is the point to aim at, not minding the hostile artillery which fires on us. Our fire against artillery will be most effective when that artillery cannot reply, *i. e.* when it is limbering up, moving, or unlimbering. A few good shots cause great confusion in such moments. The old rule that artillery, excepting in pressing moments of importance, should not approach infantry to within 300 yards, or the range of small arms, will now soon be antiquated. With the increasing range of modern muskets, field artillery, to be effective, cannot any longer keep out of musket range; and a gun with its limber, horses, and gunners, forms a group quite large enough for skirmishers to fire at, at 600 yards with the Minié or Enfield rifle. The long-established idea, that who wishes to live long must enlist in the artillery, appears to be no longer true, for it is evident that skirmishing from a distance will in future be the most effective way of combating artillery; and where is the battle-field in which there could not be found capital cover for skirmishers within 600 yards from any possible artillery emplacement?—Against advancing lines or columns of infantry, artillery has thus far always had the advantage; a few effective rounds of grape, or a couple of solid shot ploughing through a deep column, have a terribly cooling effect. The nearer the attack comes, the more effective becomes our practice; and even at the last moment we can easily withdraw our guns from an opponent of such slowness; though whether a line of *chasseurs de Vincennes*, advancing at the *pàs gymnastique*, would not be down upon us before we had limbered up, must still remain doubtful.—Against cavalry, coolness gives the advantage to artillery. If the latter reserve their grape to within 100 yards, and then give a well-aimed volley, the cavalry will be found pretty far off by the time the smoke has cleared away. At all events, to limber up and try to escape, would be the worst plan; for cavalry would be sure to overtake the guns.—Artillery against artillery, the ground, the calibres, the relative number of guns, and the use made thereof by the parties, will decide. It is, however, to be noticed, that though the large calibre has an undoubted advantage at long ranges, the smaller calibre approaches in its effects those of the large one as the ranges decrease, and at short distances almost equals them. At Borodino, Napoleon's artillery consisted principally of 3 and 4-pounders, while the Russians exulted in their numerous 12-pounders; yet the French small pop-guns had decidedly the best of it.—In supporting either infantry or cavalry, the artillery will have always to gain a position on its flank. If the infantry advances, it advances by half-batteries or sections on a line with the skirmishers, or rather in advance of it; as soon as the infantry masses prepare to attack with the bayonet, it trots up to 400 yards from the enemy, and prepares the charge by a rapid fire of case shot. If the attack is repelled, the artillery will re-open its fire on the pursuing enemy until compelled to withdraw; but if the attack succeeds, its fire contributes a great deal to the completion of the success, one-half of the guns firing while the other advances. Horse artillery, as a supporting arm to cavalry, imparting to it some of that defensive element which it naturally lacks altogether, is now one of the most favorite branches of all services, and brought to high perfection in all European armies. Though intended to act on cavalry ground, and in company with cavalry, there is no horse artillery in the world which would not be prepared to gallop across a country where its own cavalry would not follow without sacrificing its order and cohesion. The horse artillery of every country forms the boldest and skilfullest riders of its army, and they will take a particular pride, on any grand field-day, in dashing across obstacles, guns and all, before which the cavalry will stop. The tactics of horse artillery consist in boldness and coolness. Rapidity, suddenness of appearance, quickness of fire, readiness to move off at a moment's notice, and to take that road which is too difficult for the cavalry, these are the chief qualities of a good horse artillery. Choice of position there is but little in this constant change of places; every position is good so as it is close to the enemy and out of the way of the cavalry; and it is during the ebbing and flowing of cavalry engagements, that the artillery, skirting the advancing and receding waves, has to show every moment its superior horsemanship and presence of mind in getting clear of this surging sea across all sorts of ground where not every cavalry dares, or likes to follow.—In the attack and defence of posts, the tactics of artillery are similar. The principal thing is always to fire upon that point from which, in defence, threatens the nearest and most direct danger, or in attack, from which our advance can be most effectually checked. The destruction of material obstacles also forms part of its duties, and here the various calibres and kinds of ordnance are applied according to their nature and effect; howitzers for setting fire to houses, heavy guns to batter down gates, walls, and barricades.—All these remarks apply to the artillery which in every army is attached to the divisions. But the grandest results are obtained by the reserve artillery in great and decisive battles. Held back out of sight and out of range during the greater part of the day, it is brought forward in a mass upon the decisive point as soon as the time for the final effort has come. Formed in a crescent a mile or more in extent, it concentrates its destructive fire upon a comparatively small point. Unless an equivalent force of guns is there to meet it, half an hour's rapid firing settles the matter. The enemy begins to wither under the hailstorm of howling shot; the intact reserves of infantry advance—a last, sharp, short struggle, and the victory is won. Thus did Napoleon prepare Macdonald's advance at Wagram, and resistance was broken before the 3 divisions advancing in a column had fired a shot or crossed a bayonet. And since those great days only can the tactics of field artillery be said to exist. (See also Cannon.)

Aspern

ASPERN and Essling, a town and village on the north side of the Danube, the former about half a league, the latter about 2 leagues below Vienna, situated on the great meadowy plain of the Marchfield, extending from the river to the wooded mountain heights of the Bisamberg, celebrated for the 2 days' terrible fighting between the French and Austrians, on May 21 and 22, 1809, and the first defeat of the emperor Napoleon, who was here beaten and forced to retreat by the archduke Charles.—In the early part of the campaign, Napoleon, with the grand army, had made his way through the Tyrol, up the rivers Inn and Iser; had defeated the archduke at Eckmühl; forced him across the Danube, into the mountains of Bohemia, at Ratisbon, which he took by assault, thus interposing between the Austrian army and capital; and then, detaching Davoust with 40,000 men to amuse the imperial general, had descended the Danube, and made himself master of Vienna; while from the Italian side his lieutenants, Eugene Beauharnois, and Macdonald, were advancing victoriously through Dalmatia, Carniola, and up the valley of the Muhr, in which Jellachich was severely defeated, to join their commander. In the mean time, the archduke Charles, who since his defeat at Eckmühl had been moving slowly down the river, on the northern side, hoping for an opportunity to fight at advantage and rescue the empire under the walls of the capital itself, took post with his army on the Bisamberg, over against the island of Lobau, and another smaller islet, which here divide the Danube into 4 channels.—The archduke was at the head of 100,000 men, and was in hourly expectation of being joined by his brother, the archduke John, with 40,000 more, which would have been raised to 60,000, had that prince effected his junction, as he was explicitly ordered to do, with Kolowrat at Lintz, and which would have occupied a most commanding position in the rear of Napoleon, and on the principal line of his communications.—It was Napoleon's object, who had concentrated under his own orders 80,000 admirable soldiers ready to take the field, including the imperial guard and the reserve cavalry of Bessières, to cross the Danube and give battle to the archduke, in the hope of crushing him before the arrival of his reinforcements. To this intent, he bridged the river from the right bank to the island of Lobau, with a structure of most solid materials, supported on 68 large boats and 9 huge rafts, and from Lobau to the Marchfield, midway between the villages of Aspern and Essling, with a slighter fabric of pontoons; and on the morning of the 21st began to pass his troops across, with the utmost alacrity and diligence. The Austrian commander, from his mountain position, perceived the rashness of the manœuvre, by which the emperor was pushing his vast host across a wide and rapid river, by means of a single bridge, which could only admit of a slow and gradual defiling of the men of all arms, over its long and narrow causeway, difficult to cavalry, yet more difficult to artillery; and which, in case of his being forced to retreat, scarcely offered a possibility of saving the army; and perceiving it, resolved at once to avail himself of the opportunity of crushing half the French host on the northern bank, while the rest of the army was either in the act of passing, or on the southern side. Sending orders to Kolowrat, Nordman, and the other officers in command up the river, to prepare boats laden with heavy materials and combustibles for the destruction of the bridges, when the time should arrive, the archduke kept his great army out of sight, ordering his cavalry and outposts only to make a nominal resistance, and then to fall back before the advance of the French, which was led by Massena; until at 12 o'clock the movement of the enemy was sufficiently developed, above 40,000 French being already on the northern shore—to justify his assuming the initiative.—At that hour, descending from the wooded heights of the Bisamberg, with 80,000 men, of whom 14,000 were splendid cavalry, and 288 cannons, he precipitated himself upon the enemy, making the 2 villages of Aspern and Essling, on Napoleon's flanks, the principal points of his attack; the central space between these 2 strong places, which were built of stone, with garden walls and many enclosures, was occupied by the tremendous Austrian batteries, guarded chiefly by cavalry, with Hohenzollern's infantry in reserve in the rear. The fighting on both the flank attacks was terrific, and the fury of the assaults and obstinacy of the defence almost unparalleled in the history of war. Both villages were taken and retaken several times, and so terribly did the Austrian artillery devastate the French lines, that Napoleon ordered a grand charge of cavalry to take the batteries, if possible. The superb French cuirassiers of the guard charged with their usual impetuous valor, routed the Austrian horse, and would have carried the guns, but that they were hastily withdrawn, and the infantry formed in squares, which, as at Waterloo afterward, defied all attempts to break their impenetrable formation, and at last defeated the horse, and compelled them to retire, shattered and decimated, into their own lines. In the mean time, Aspern was taken by the imperialists, their centre was gradually but irresistibly gaining ground, in spite of the gallant devotion of the cuirassiers, who charged again and again with constantly diminishing numbers, and who alone prevented the French lines from being broken through.—Night brought a brief cessation of the strife; but the French had suffered a decided defeat in a pitched battle; their left flank was turned, their centre forced back almost to the bridges; and although Essling, on their right, had been defended by the gallantry of Lannes, it was surrounded by the Austrians, who slept on their arms among the French dead, waiting only the return of light to renew their offensive operations.—During the whole night, however, fresh forces were defiling across the bridges, and debouching upon the Marchfield, and at daybreak, after all the losses of the preceding day, Napoleon had full 70,000 men in line, while Davoust was beginning to cross over at the head of 30,000 more. The battle began by renewed attacks on the two disputed villages; Essling was carried by the imperialists, and Aspern retaken by the French. Both villages were the scene of desperate fighting all day long, and both were taken and retaken several times with the bayonet, but at last remained in the hands of the Austrians, who, in the evening, advanced their artillery beyond both places, and actually crossed their fire upon the rear of the French. But during these bloody conflicts, Napoleon, who was relieved by his vast accession of forces from the necessity of acting on the defensive, had recourse to his favorite manœuvre of an overwhelming attack on the centre. At the head of a huge column of above 20,000 infantry, with 200 cannon preceding them, and a tremendous cavalry force in their rear, he launched Lannes and Oudinot directly on the Austrian centre, where the lines appeared the weakest, between the left of Hohenzollern and the right of Rosenberg. At first, this tremendous attack seemed to be perfectly successful; the Austrian lines were forced; a huge gap made between Rosenberg and Hohenzollern, into which the cavalry burst with appalling fury, and cut their way clear through to the reserves of the prince of Reuss, far in the rear; and already the cry went abroad, that the battle was lost; but the archduke Charles was equal to the emergency; the reserve grenadiers were brought up at double quick time, and formed in a checker of squares; the numerous dragoons of prince Lichtenstein came galloping up behind them, and, with the colors of Zach's corps in his own hand, the gallant prince restored the battle.—The terrific column of Lannes could advance no further, but halting, began to exchange volleys with the squares, and, unable to deploy, was crushed by the concentrated fire of the batteries, playing on it at half musket shot. In vain the cavalry charged home on the bayonets of the squares, for not a square wavered or was broken; and, at length, the Austrian dragoons of the reserve, coming up with loud shouts, charged the cuirassiers in their turn, routed them, and drove them in confusion back upon their infantry, and completed the disorder. Immediately after this repulse, Hohenzollern broke through the French lines on the right of the centre with 6 Hungarian regiments of grenadiers, and carried all before him, even to the rear of Essling, which, with Aspern, were both carried finally by the imperialists. From these villages, as the Austrian centre was now driving all before it, in spite of the unparalleled exertions of the French army, which was now in full retreat to the island of Lobau, the Austrian batteries crossed their fire, with fatal effect, on the bridges, every shot telling on the crowded masses of men and horses.—Meanwhile, to augment the perils of the French, the bridge connecting the island with the southern shore was broken by the Austrian fireboats and rafts, and all escape from the island was rendered, for the moment, impossible. Still, with unexampled firmness the rear-guard of the French held the Austrians in check, until, at midnight, the last of the enemy having withdrawn from the field of battle into the island, the thunder of the Austrian batteries ceased, and the exhausted artillerists fell asleep beside their guns, worn out by the fatigues of that unparalleled and glorious day.—Seven thousand French were buried on the field of battle by the victors; 29,793 were carried, wounded and prisoners, into Vienna. Lannes and St. Hilaire were mortally wounded, and died a few days afterward. On the side of the imperialists, 87 superior officers, and 4,200 privates, were killed; beside 16,300 wounded. But the victory, gained under the very walls, and almost within sight of the capital, was complete; the enemy, broken, defeated, and dispirited, were cooped up in the narrow limits of the island of Lobau, and, had the archduke John, in obedience to his orders, made his appearance in the rear of the French with 60,000 fresh men, on the morning following the defeat of Aspern, it were difficult to say what might not have been the result.—But Napoleon's time had not yet arrived, and the nations were yet doomed to suffer 4 years longer, before the final downfall of the military colossus should restore them to their lost freedom, by the fields of Leipsic and Waterloo.

Attack

ATTACK, in its general, strategetical meaning, is held to signify the taking of the initiative in any particular skirmish, combat, engagement, or pitched battle; in all of which one party must necessarily commence with offensive, the other with defensive, operations. The attack is generally considered the more successful, and consequently, armies acting on the defensive, that is to say, in wars of a strictly defensive nature, often initiate offensive campaigns, and even in defensive campaigns deliver offensive actions. In the former case, the object to be gained is that the defending army, by shifting the place and scene of operation, disturbs the calculations of the enemy, takes him away from his base of operations, and compels him to fight at times and places different from those which he expected, and for which he was prepared; and perhaps, positively disadvantageous to him.—The two most remarkable instances of offensive operations and direct attacks, used in strictly defensive campaigns, occurred in the two wonderful campaigns of Napoleon: that of 1814, which resulted in his banishment to Elba; and that of 1815, which was terminated by the rout of Waterloo and the surrender of Paris. In both these extraordinary campaigns, the leader, who was acting strictly in the defence of an invaded country, attacked his enemies on all sides, and on every occasion; and, being always vastly inferior, on the whole, to the invaders, contrived always to be superior, and generally victorious, on the point of attack. The unfortunate result of both these campaigns detracts nothing from the conception or the details of either. They were both lost from causes entirely independent of their plan or execution, causes both political and strategetical, the principal of which were the vast superiority of the allied means, and the impossibility that any one nation, exhausted by wars of a quarter of a century, should resist the attack of a world in arms against it. It has been said that when two armies are set face to face in the field, that army which takes the initiative, or in other words, *attacks*, has the decided advantage. It would appear, however, that those who have adopted this view, have been dazzled by the splendid achievements of a few great generals, and of one or two great military nations, which have owed their successes to attacks on the grandest scale; and that the opinion requires much modification. Epaminondas, Alexander, Hannibal, Cæsar, and, last not least, Napoleon I., were, emphatically, attacking generals, and won all their great victories, as, in the main, they endured all their great reverses, in actions wherein themselves assumed the initiative. The French owe every thing to the impetuosity of their almost irresistible onset, and to their rapid intelligence in following up successes and converting disasters, on the part of their enemy, into irretrievable ruin. They are by no means equal in the defensive. The history of the greatest battles in the world seems to show that, where the attacked army has solid and obstinate endurance sufficient to make it to resist, unbroken, until the fire of the assailants begins to die out, and exhaustion and reaction to succeed, and can then assume the offensive and attack in its turn, the defensive action is the safest. But there are few armies, or, indeed, races of men, who can be intrusted to fight such battles. Even the Romans, though magnificent in the defence of walled towns, and wonderful in offensive field operations, were never celebrated in the defensive; and their history shows no battle in which, after fighting all day under reverse and on the defensive, they in the end attacked and won. The same is generally characteristic of the French armies and leaders. The Greeks, on the contrary, fought many of their best battles, as those of Marathon, Thermopylæ, Platæa, and many others, but the latter especially, on the plan of receiving the assault until it slackens, and then attacking the half-exhausted and surprised assailants. The same has been the English, and, to a great extent, the Swiss and German system for many ages, and generally successful with those troops, as it has been in later days with the Americans. The battles of Crecy, Poitiers, Agincourt, Waterloo, Aspern and Essling, and many others, too numerous to be recorded, were fought exactly on the same principle; and it may be added that in the war of 1812–'14, the Americans successfully retorted on the English, who almost invariably attacked them, and that too—contrary to their usual mode—in column, the plan which they had proved to be so valuable against the French, and which they have still more recently proved against the Russians.—The ordinary modes of attack are the following, when two armies are opposed face to face, in the field, and when both intend to fight. First, and simplest, the direct parallel attack, when the assailing force joins battle, at once, along the whole front, from wing to wing, and fights it out by sheer force. Second, the attack by the wings, either on both simultaneously, or on one first and then on the other, successively, keeping the centre retired. This was Napoleon's favorite battle, by which, having caused the enemy to weaken his centre in order to strengthen his wings, while he kept his own centre retired and fortified by immense reserves of cavalry, he finally rushed into the central gap and finished the action with an exterminating blow. Third, the attack by the centre, keeping the wings retired and in reserve. This is the most faulty of all attacks, and has rarely been adopted, and, it is believed, never successfully. If an army be forced into this position, it is generally surrounded and annihilated, as was the Roman attacking army at Cannæ. It is, on the contrary, an admirable position of defence. Fourth, the oblique attack, invented by Epaminondas, and practised by him, with splendid success, at Leuctra and Mantinea. It consists in attacking one wing of the enemy, with one wing secretly and successively reinforced, while the centre and other wing are retired, but are so manœuvred as to threaten a constant attack, and prevent the defending party from strengthening its own weak point, until it is too late. This was the favorite method of the Austrian Clairfait, by which he constantly defeated the Turks; and of Frederic the Great, who was wont to say that "he was only fighting Epaminondas his battles over again," in his own finest victories. It is worthy of remark that the Greeks, the French generally, as well as the Russians and the Austrians, have gained all their best battles by attack of columns; which, when they are not effectually checked and brought to a stand, break through the centre and carry all before them. The Romans, the English, and the Americans, almost invariably, have fought and still fight, whether in attack or on defence, in line; in which formation they have always proved able to resist and hold in check the assaulting column with their centre, until by the advance of their wings they can overlap the enemy's flanks and crush him. It is worthy of remark, that wherever the English have varied from what may be called their national order of attack, in line two deep, and have assailed in column, as at Fontenoy and Chippewa, they have suffered disaster. The inference is nearly irresistible, that the central attack by column is radically faulty against firm and steady troops, although it is sure of success against an enemy of inferior physique and discipline, especially if he be demoralized in spirit.—In attacking a redoubt or field fortification, if it be defended only by infantry, the assailants may march immediately to the attack; if it be defended also by cannon, it is necessary first to silence cannon by cannon. The cannonade is conducted in such a way as to break the palisades, dismount the pieces, and plough up the parapet, and thus to oblige the defending cannon to be withdrawn into the interior. After the attacking artillery has thus produced its effect, the light infantry, principally riflemen, envelop a part of the work, directing their fire upon the crest of the parapet, so as to oblige the defenders either not to show themselves at all, or at least to fire hurriedly. Gradually the riflemen approach, and converge their aim, and the columns of attack are formed, preceded by men armed with axes and carrying ladders. The men in the front rank may also be furnished with fascines which both serve as bucklers and will assist in filling up the ditch. The guns of the work are now brought back and directed against the assailing columns, and the attacking riflemen redouble their fire, aiming particularly upon the artillery men of the defence who may attempt to reload their pieces. If the assailants succeed in reaching the ditch, it is essential that they should in the assault act together, and leap into the work from all sides at once. They therefore wait a moment upon the brim for a concerted signal; and in mounting upon the parapet they are met by howitzer shells, rolling stones, and trunks of trees, and at the top are received by the defenders at the point of the bayonet or with the butt of the musket. The advantage of position is still with the defenders, but the spirit of attack gives to the assailants great moral superiority; and if the work be not defended by other works upon its flanks, it will be difficult, though not quite unprecedented, to repel even at this point a valiant assault. Temporary works may be attacked by surprise or by open force, and in either case it is the first duty of the commander to obtain by spies or reconnoissance, the fullest possible information concerning the character of the work, its garrison, defences, and resources. The infantry are often thrown in an attack upon their own resources, when they must rely upon their own fertile invention, firing the abatis by lighted fagots, filling up small ditches with bundles of hay, escalading palisades with ladders under the protection of a firing party, bursting barricaded doors or windows by a bag of powder; and by such measures decisively and boldly used, they will generally be able to overcome any of the ordinary obstructions.

Ayacucho

AYACUCHO, a department in the republic of Peru; pop. 131,921. Near its chief town, also named Ayacucho, the battle was fought which finally secured the independence of Spanish South America. After the battle of Junin (Aug. 6, 1824), the Spanish viceroy, Gen. La Serna, attempted by manœuvring to cut off the communications of the insurgent army, under Gen. Sucre. Unsuccessful in this, he at last drew his opponent to the plain of Ayacucho, where the Spaniards took up a defensive position on a height. They numbered 18 battalions of infantry, with artillery and cavalry, in all 9,310 men. On Dec. 8, 1824, the advanced guards of both armies became engaged, and on the following day Sucre advanced with 5,780 men to the attack. The 2d Colombian division, under Gen. Cordova, attacked the Spanish left, and at once threw it into disorder. The Peruvian division on the left, under Gen. Llamar, met with a more obstinate resistance, and could make no progress until the reserve, under Gen. Lara, came up. The enemy's retreat now becoming general, the cavalry was launched in pursuit, dispersing the Spanish horse and completing the defeat of the infantry. The Spaniards lost 6 generals killed and 2,600 killed, wounded, and prisoners, among the latter the viceroy. The South American loss was 1 general and 808 officers and men killed, 520 wounded, among them 6 generals. The next day Gen. Canterac, who now commanded the Spanish army, concluded a capitulation, by which not only he and all his troops surrendered prisoners of war, but also all the Spanish troops in Peru, all military posts, artillery, and magazines, and the whole of Peru, as far as they still held it (Cuzco, Arequipa, Puno, Quilca, &c.), were delivered up to the insurgents. The troops thus delivered up as prisoners of war amounted in all to nearly 12,000. Thus the Spanish dominion was definitively destroyed, and on Aug. 25, 1825, the congress of Chuquisaca proclaimed the independence of the republic of Bolivia.—The name *Ayacuchos* has in Spain been given to Espartero and his military partisans. A portion of the military camarilla grouped around him had served with him in the war against the South American insurrection, where, beside by military comradeship, they were bound together by their common habits of gambling, and actually pledged themselves to support each other politically when returned to Spain. This pledge they have honestly kept, much to their mutual interests. The nickname of Ayacuchos was conferred on them in order to imply that Espartero and his party had materially contributed to the unfortunate issue of that battle. This, however, is false, though the report has been so assiduously spread that even now it is generally credited in Spain. Espartero not only was not present at the battle of Ayacucho, but he was not even in America when it happened, being on his passage to Spain, whither Viceroy La Serna had sent him with despatches for Ferdinand VII. He had embarked at Quilca, June 5, 1824, in the British brig Tiber, arriving in Cadiz Sept. 28, and at Madrid Oct. 12, and again sailed for America from Bordeaux on that very same Dec. 9, 1824, on which the battle of Ayacucho was fought. (See Don Juan Segundo Florez, *Espartero*, Madrid, 1844, 4 vols., and Principe, *Espartero*, Madrid, 1848.)

Barbette

BARBETTE. In a battery, guns are said to be placed *en barbette* when they stand high enough to fire over the crest of the parapet instead of, as usual, through embrasures. To raise the guns to this height, various means are adopted. In field fortifications, an earthwork platform behind the parapet forms the station for the gun. In a permanent fortification, the common high sliding carriage or the traversing platform raises the gun to the required level.

Guns placed *en barbette* have not the same cover from the enemy's fire as those firing through embrasures; they are, therefore, disposed in this manner where the parapet cannot afford to be weakened by the cutting off embrasures, or where it is desirable to extend their range more to the right and left than would be possible with embrasures. On this account, guns are placed *en barbette* in field fortifications; in the salient angles of works; and in strand batteries destined to act against ships, especially if the parapet is of masonry. To protect them from enfilading fire, traverses and bonnets are constructed when necessary.

Barclay de Tolly

BARCLAY DE TOLLY, MICHEL, Russian prince and field-marshal, born in Livonia in 1759, died at Insterburg, in East Prussia, May 25, 1818. In 1769, when not yet 11, he entered the Russian army, and served during 29 years in its different campaigns against the Turks, Swedes, and Poles, but did not emerge from the inferior ranks before 1798. He distinguished himself in the campaign of 1806. His military reputation dates from the year 1807, when, at the head of the Russian vanguard, he most gallantly defended Prussian Eylau, making a prolonged stand in the streets, the church, and the churchyard of that town. In 1808 he forced the Swedes back into Carelia, and, in 1809, as general of infantry, imitated, on a much larger scale, the celebrated march of Charles Gustavus over the frozen waters of the Little Belt, by marching 12,000 Russians with artillery, ammunition, provisions, and baggage, over the ice which covered the gulf of Bothnia. He took Umea, accelerated by his appearance the revolution preparing against Gustavus IV., and compelled the Swedes to sue for peace. After 1810 he was intrusted with the direction of the Russian war ministry. In 1812 he assumed the command of the 1st army of the west. Its principal corps, at the head of which he placed himself, and which official reports had swollen to 550,000 men, proved, in fact, to consist of 104,000 only, while the aggregate of the troops, stationed from the coasts of the Baltic to the banks of the Pruth, did not muster beyond 200,000. Thus the retreat of the Russian army, the original design of which Napoleon, in his memorials of St. Helena, falsely attributed to Barclay de Tolly, and which, long before the rupture between Russia and France, had been elaborated by the Prussian general, Phull, and after the declaration of war, was again pressed upon Alexander by Bernadotte, had now become not a thing of choice, but of dire necessity. While Barclay de Tolly had the great merit of resisting the ignorant clamors for battle which arose from the Russian rank and file, as well as from headquarters, he executed the retreat with remarkable ability, incessantly engaging some part of his troops in order to afford to Prince Bagration the means of effecting a junction with him, and to Admiral Tschitschagoff the facilities for falling in the rear of the enemy. When forced to a battle, as at Smolensk, he took a position which prevented the battle from becoming decisive. When, not far from Moscow, a decisive battle was no longer to be avoided, he selected the strong position of Gzhatsk, hardly to be assailed in the front, and to be turned only by very extended roundabout ways. He had already posted his army when Kutusoff arrived, in whose hands the intrigues of the Russian generals, and the murmurs of the Muscovite army against the foreigner heading the holy war, had placed the supreme command. Out of spite against Barclay de Tolly, Kutusoff abandoned the lines of Gzhatsk, in consequence of which the Russian army had to accept battle in the unfavorable position of the Borodino. During that battle, Aug. 26, Barclay, commanding the right wing, was the only general who held his post, not retiring until the 27th, thus covering the retreat of the Russian army, which, but for him, would have been completely destroyed. After the retreat from the Borodino, beyond Moscow, it was Barclay de Tolly again who prevented any useless attempt at a defence of the holy city. During the campaign of 1813, Barclay took the fortress of Thorn, April 4, 1813, vanquished Lauriston at Konigswartha, covered, after the defeat of Bautzen, May 8, the retreat of the allied army, won the battle of Görlitz, contributed to Vandamme's capitulation, and distinguished himself in the battle of Leipsic. During the campaign of 1814 he commanded no independent corps, and acted in an administrative and diplomatical, rather than in a military character. By the stern discipline he imposed upon the troops under his immediate control, he won the good opinions of the French people. On Napoleon's return from Elba, he arrived too late from Poland to assist at the battle of Waterloo, but partook in the second invasion of France. He died on a journey to the bath of Carlsbad. The last years of his life were darkened by calumny. He was, beyond question, the best of Alexander's generals, unpretending, persevering, resolute, and full of common sense.

Bastion

BASTION. In ancient fortification, the walls of towns were flanked by round or square towers, from which archers and war machines could direct their projectiles on the storming enemy while he was held in check by the ditch. On the introduction of artillery into Europe, these towers were made considerably larger, and ultimately, in the beginning of the 16th century, the Italian engineers made them polygonal instead of round or square, thus forming a bastion. This is an irregular pentagon, one side of which is turned inward toward the tower, so that the opposite salient angle faces the open field. The 2 longer sides, enclosing the salient angle, are called the faces; the 2 shorter ones, connecting them with the town wall or rampart, are called the flanks. The faces are destined to reply to the distant fire of the enemy, the flanks to protect the ditch by their fire. The first Italian bastions still showed their descent from the ancient towers. They kept close to the main walls; the salient angle was very obtuse, the faces short, and the parapet revetted with masonry to the very top. With such small bastions, the main office of the flank was the defence of the ditch in front of the curtain connecting 2 bastions; consequently, the flanks were placed perpendicular to the curtain. These bastions were distributed either on the angles of the polygon forming the whole *enceinte* of the fortress, or where one side of the polygon was so long that a part was not within effective musket range of the 2 projecting flanks, an intermediate bastion, called *piatta forma*, was erected on its middle. With the improving siege artillery of the 17th century, larger bastions became necessary, and very soon the curtain lost its importance, the bastions being now the principal points to be attacked. The office of the flanks was also changed: they now had to enfilade, chiefly, the ditch in front of the face of the opposite bastion, and instead of being erected perpendicular to the curtain, they were made perpendicular to the prolongation of that face, called the line of defence. The height of the masonry revetement was reduced so as to be covered from direct fire by the glacis or the parapet of the lower outworks. Thus bastions, in the hands of the old French and German school, and subsequently in those of Vauban and Coehorn, underwent many changes of form and size, until about 1740, Cormontaigne published a system of bastionary fortification, which is generally considered as the most perfect of its kind. His bastions are as large as they can well be made; his flanks are nearly, but not quite, perpendicular to the lines of defence, and great improvements are made in the outworks. Bastions are either full or empty. In the first case, the whole of the interior is raised to the height of the rampart; in the latter, the rampart goes round the interior side of the bastion with a sufficient breadth for serving the guns, and leaves a hollow in the middle of the work. In full bastions, cavaliers are sometimes erected: works, the sides of which run parallel with those of the bastion, and are elevated high enough to allow of the guns being fired over its parapet. From the commanding height of such cavaliers, guns of the greatest range are generally placed in them in order to annoy the enemy at a distance. The system of fortification based upon bastions was the only one known from the 16th to the end of the 18th century, when Montalembert put forward several new methods without bastions, among which the polygonal or *caponière* system for inland fortresses, and the system of casemated forts with several tiers of guns, have found most favor.

Battery

BATTERY. In field artillery, this expression means a number of guns, from 4 to 12, with the necessary horses, gunners, and equipments, and destined generally to act together in battle. The British and French have 6, the Prussians and Austrians 8, the Russians 8 or 12, guns to a battery. Field batteries are divided into light, heavy, and howitzer batteries; in some countries, there are, beside, mountain batteries. In describing a position for battle, the word battery is also used to indicate any spot where guns are placed. In siege artillery, battery means either any one of the lines of the fortress which is armed with guns, or else, and especially, a number of guns placed in line for the attack of a fortress, and covered by a parapet. The construction of this parapet, and the emplacements for the guns, are what is understood by the construction of a battery. With respect to their profiles, batteries are either elevated, half sunken, or sunken; with respect to their armament, guns, howitzer, mortar batteries; with respect to the shelter afforded, batteries with embrasures, barbette batteries (without embrasures), casemated batteries (covered in bomb proof). With respect to the purpose aimed at, there are dismounting batteries, to dismount the guns in one of the lines of the fortress, parallel to which they are constructed; ricochetting batteries, constructed in the prolongation of a line, and destined to enfilade it, the balls and shells just passing over the parapet and hopping along the line in low jumps; mortar batteries, to bombard the interior of the bastions and the buildings in the fortress; breaching batteries, to bring down the revetement walls of the scarp of the rampart; counter batteries, erected on the crown of the glacis opposite the flanks, to silence the fire of a flank which protects the ditch in front of the breach. Strand batteries are intrenchments thrown up on particular points of a sea shore to act against hostile men-of-war; they are either permanent, in which case they are generally constructed of masonry, and often casemated, with several tiers of guns, or temporary earthworks, mostly barbet the batteries to insure a wider sweep; in either case they are generally closed to the rear against a sudden attack by landed infantry. To construct an earthwork battery, the principal dimensions are traced, and the earth procured from a ditch in front or rear of the intended parapet. The outer slope of the parapet is left without revetement, but the interior slope and the cheeks or interior sides of the embrasures are revetted with fascines, gabions, hurdles, casks filled with earth, sandbags, or sods of turf, so as to retain the earth in its position, even with a steep slope. A *berme*, or level space, is generally left standing between the outer slope of the parapet and the ditch in front, to strengthen the parapet. A banquette is constructed inside the battery, between the embrasures, high enough for a man to stand on and look over the parapet. An epaulment or parapet forming an obtuse angle with that of the battery is often constructed on one or both flanks, to protect it against flanking fire. Where the battery can be enfiladed, traverses or epaulments between the guns become necessary. In barbette batteries, this protection is strengthened by a further elevation of the traverses several feet above the height of the parapet, which elevation is continued across the parapet to its outer crest, and called a bonnet. The guns are placed on platforms constructed of planks and sleepers, or other timbers, to insure permanency of emplacement. The ammunition is kept partly in recesses under the parapet, partly in a sunken building of timber covered in bomb proof with earth. To shelter the gunners from rifle firing, the embrasures are often closed by blindages of strong planks, to open to either side when the gun is run out, or provided with a hole for the muzzle to pass through. The fire of the enemy is rendered innocuous by blindages of timbers laid with one end on the inner crest of the parapet, and sloping to the ground behind. In batteries where howitzers are used, the soles of the embrasures slope upward instead of downward; in mortar batteries, there are no embrasures at all, the high elevation taken insuring the passage of the shell over the crest of the parapet. To give effective protection against the fire of heavy guns, the parapet should be at least 17 or 18 feet thick; but if the calibre of the enemy is very heavy, and the ground bad, a thickness of 24 feet may be required. A height of 7 or 8 feet gives sufficient protection. The guns should have a clear distance of from 10 to 14 feet; if traverses are necessary, the parapet will have to be lengthened accordingly.

Battle

BATTLE. The encounter of two hostile bodies of troops is called a battle, when these bodies form the main armies of either party, or at least, are acting independently on their own separate seat of war. Before the introduction of gunpowder, all battles were decided by actual hand-to-hand fight. With the Greeks and Macedonians, the charge of the close phalanx bristling with spears, followed up by a short engagement with the sword, brought about the decision. With the Romans, the attack of the legion disposed in three lines, admitted of a renewal of the charge by the second line, and of decisive manœuvring with the third. The Roman line advanced up to within 10 or 15 yards of the enemy, darted their *pila*, very heavy javelins, into him, and then closed sword in hand. If the first line was checked, the second advanced through the intervals of the first, and if still the resistance was not overcome, the third line, or reserve, broke in upon the enemy's centre, or fell upon one of his wings. During the middle ages, charges of steel-clad cavalry of the knights had to decide general actions, until the introduction of artillery and small fire-arms restored the preponderance of infantry. From that time the superior number and construction of fire-arms with an army was the chief element in battle, until, in the 18th century, the whole of the armies of Europe had provided their infantry with muskets, and were about on a par as to the quality of their fire-arms. It was then the number of shots fired in a given time, with average precision, which became the decisive element. The infantry was drawn up in long lines, three deep; it was drilled with the minutest care, to insure steadiness and rapid firing, up to 5 times in a minute; the long lines advanced slowly against each other, firing all the while, and supported by artillery firing grape; finally, the losses incurred by one party caused the troops to waver, and this moment was seized by the other party for an advance with the bayonet, which generally proved decisive. If one of the two armies, before the beginning of the battle, had already taken up its position, the other attempted generally to attack it under an acute angle, so as to outflank, and there to envelope, one of his wings; that wing, and the nearest portion of the centre, were thus thrown into disorder by superior forces, and crowded together in deep masses, upon which the attacking party played with his heavy artillery. This was the favorite manœuvre of Frederic the Great, especially successful at Leuthen. Sometimes, too, the cavalry was let loose upon the wavering infantry of the enemy, and in many instances with signal success; but upon the whole, the quick fire of the infantry lines gave the decision—and this fire was so effective, that it has rendered the battles of this period the bloodiest of modern times. Frederic the Great lost, at Kolin, 12,000 men out of 18,000, and at Kunersdorf, 17,000 out of 30,000, while in the bloodiest battle of all Napoleon's campaigns, at Borodino, the Russians lost not quite one-half of their troops in killed and wounded. The French revolution and Napoleon completely changed the aspect of battles. The army was organized in divisions of about 10,000 men, infantry, cavalry, and artillery mixed; it fought no longer in line exclusively, but in column and in skirmishing order also. In this formation it was no longer necessary to select open plains alone for battle-fields; woods, villages, farm-yards, any intersected ground was rather welcome than otherwise. Since this new formation has been adopted by all armies, a battle has become a very different thing from what it was in the 18th century. Then, although the army was generally disposed in three lines, one attack, or at most two or three attacks, in rapid succession, decided its fate; now, the engagement may last a whole day, and even two or three days, attacks, counter-attacks, and manœuvres succeeding each other, with varying success, all the time through. A battle, at the present day, is generally engaged by the advanced guard of the attacking party sending skirmishers out with their supports. As soon as they find serious resistance, which generally happens at some ground favorable for defence, the light artillery, covered by skirmishers and small bodies of cavalry, advances, and the main body of the advanced guard takes position. A cannonade generally follows, and a deal of ammunition is wasted, in order to facilitate reconnoitring, and to induce the enemy to show his strength. In the mean time, division after division arrives, and is shown into its fighting position, according to the knowledge so far obtained of the measures of the enemy. On the points favoring an attack, skirmishers are sent forward, and supported where necessary by lines and artillery; flank attacks are prepared, troops are concentrated for the attack of important posts in front of the main position of the enemy, who makes his arrangements accordingly. Some manœuvring takes place, in order to threaten defensive positions, or to menace a threatening attack with a counter-charge. Gradually the army draws nearer to the enemy, the points of attack are finally fixed, and the masses advance from the covered positions they hitherto occupied. The fire of infantry, in line, and of artillery, now prevails, directed upon the points to be attacked; the advance of the troops destined for the charge follows, a cavalry charge on a small scale occasionally intervening. The struggle for important posts has now set in; they are taken and retaken, fresh troops being sent forward in turns by either party. The intervals between such posts now become the battle-field for deployed lines of infantry, and for occasional bayonet charges, which, however, scarcely at any time result in actual hand-to-hand fight, while in villages, farm-yards, intrenchments, &c., the bayonet is often enough actually used. In this open ground, too, the cavalry darts forward whenever opportunities offer themselves, while the artillery continues to play and to advance to new positions. While thus the battle is oscillating, the intentions, the dispositions, and, above all, the strength of the two contending armies are becoming more apparent; more and more troops are engaged, and it soon is shown which party has the strongest body of intact forces in reserve for the final and decisive attack. Either the attacking party has so far been successful, and may now venture to launch his reserve upon the centre or flank of the defending party, or the attack has been so far repulsed and cannot be sustained by fresh troops, in which case the defending party may bring his reserves forward, and by a powerful charge, convert the repulse into a defeat. In most cases, the decisive attack is directed against some part of the enemy's front, in order to break through his line. As much artillery as possible is concentrated upon the chosen point; infantry advances in close masses, and as soon as its charge has proved successful, cavalry dashes into the opening thus made, deploying right and left, taking in flank and rear the enemy's line, and, as the expression is, rolling it up toward its two wings. Such an attack, to be actually decisive, must, however, be undertaken with a large force, and not before the enemy has engaged his last reserves; otherwise, the losses incurred would be out of all proportion to the very meagre results to be obtained, and might even cause the loss of the battle. In most cases, a commander will rather break off a battle taking a decidedly unfavorable turn, than engage his last reserves, and wait for the decisive charge of his opponent; and with the present organization and tactics, this may in most cases be done with a comparatively moderate loss, as the enemy after a well-contested battle, is generally in a shattered condition also. The reserves and artillery take a fresh position to the rear, under cover of which the troops are gradually disengaged and retire. It then depends upon the vivacity of the pursuit, whether the retreat be made in good order or not. The enemy will send his cavalry against the troops trying to disengage themselves; and cavalry must, therefore, be at hand to assist them. But if the cavalry of the retiring party be routed and his infantry attained before it is out of reach, then the rout becomes general, and the rear-guard, in its new defensive position, will have hard work before it unless night is approaching, which is generally the case. Such is the average routine of a modern battle, supposing the parties to be pretty equal in strength and leadership; with a decided superiority on one side, the affair is much abridged, and combinations take place, the variations of which are innumerable; but under all circumstances, modern battles between civilized armies will, on the whole, bear the character above described.

Bayonet

BAYONET. This weapon, now generally introduced for all line-infantry, is usually stated to have been invented in France (apparently at Bayonne, whence the name) about the year 1640. According to other accounts, it was adopted by the Dutch from the Malays, who attached their *kris*, or dagger, to a musket, and introduced into France about the year 1679. Up to that time, the musketeers had no effective weapon for close combat, and consequently had to be mixed with pikemen to protect them from a closing enemy. The bayonet enabled musketeers to withstand cavalry or pikemen, and thus gradually superseded the latter arm. Originally, it was fastened to a stick for insertion into the barrel of the musket, but as it thus prevented the soldier from firing with bayonet fixed, the tube passing round the barrel was afterward invented. Still, the pike maintained itself for above half a century as an infantry weapon. The Austrians were the first to exchange it, for all their line infantry, for the musket and bayonet; the Prussians followed in 1689; the French did not do away entirely with the pike until 1703, nor the Russians till 1721. The battle of Spire, in 1703, was the first in which charges of infantry were made with fixed bayonets. For light infantry, the bayonet is now generally replaced by a short, straight and sharp-pointed sword, which can be fixed in a slide on one side of the muzzle of the rifle. It is thus certainly less firmly fixed, but as such infantry are expected to charge in line in exceptional cases only, this drawback is considered to be balanced by the manifold uses in which such an instrument can be employed.

Bem

BEM, JOZEF, a Polish general, born at Tarnow, in Galicia, in 1795, died Dec. 10, 1850. The passion of his life was hatred of Russia. At the epoch when Napoleon, by victories and proclamations, was exciting a belief in the resurrection of Poland, Bem entered the corps of cadets at Warsaw, and received his military training at the artillery-school directed by Gen. Pelletier. On leaving this school, he was appointed lieutenant of the horse-artillery; served in that capacity under Davoust and Macdonald in the campaign of 1812; won the cross of the legion of honor by his coöperation in the defence of Dantzic; and, after the surrender of that fortress, returned to Poland. As the czar Alexander, affecting a great predilection for the Polish nation, now reorganized the Polish army, Bem entered the latter in 1815, as an officer of artillery, but was soon dismissed for fighting a duel with his superior. However, he was subsequently appointed military teacher at the artillery-school of Warsaw and promoted to the rank of captain. He now introduced the use of the Congreve rocket into the Polish army, recording the experiments made on this occasion in a volume originally published in French and then translated into German. He was querulous and insubordinate, and, from 1820 to 1825, was several times arraigned before courts-martial, punished with imprisonment, released, imprisoned again, and at last sent to Kock, a remote Polish village, there to vegetate under strict police surveillance. He did not obtain his discharge from the Polish army until the death of Alexander, and the Petersburg insurrection made Constantine lose sight of him. Leaving Russian Poland, Bem now retired to Lemberg, where he became an overseer in a large distillery, and elaborated a book on steam applied to the distillation of alcohol. When the Warsaw insurrection of 1830 broke out he joined it, after a few months was made a major of artillery, and fought, in June, 1831, at the battle of Ostrolenk, where he was noticed for the skill and perseverance with which he fought against the superior Russian batteries. When the Polish army had been finally repulsed in its attacks against the Russians who had passed the Narev, he covered the retreat by a bold advance with the whole of his guns. He was now created colonel, soon after general, and called to the command-in-chief of the Polish artillery. At the storming of Warsaw by the Russians he fought bravely, but, as a commander, committed the fault of not using his 40 guns, and allowing the Russians to take Vola, the principal point of defence. After the fall of Warsaw he emigrated to Prussia with the rest of the army, urged the men not to lay down their arms before the Prussians, and thus provoked a bloody and unnecessary struggle, called at that time the battle of Fischau. He then abandoned the army and organized in Germany committees for the support of Polish emigrants, after which he went to Paris. His extraordinary character, in which a laborious fondness for the exact sciences was blended with restless impulses for action, caused him to readily embark in adventurous enterprises, whose failure gave an advantage to his enemies. Thus having in 1883, on his own responsibility, undertaken without success to raise a Polish legion for Don Pedro, he was denounced as a traitor, and was fired at by one of his disappointed countrymen, in Bourges, where he came to engage the Poles for his legion. Travels through Portugal, Spain, Holland, Belgium, and France, absorbed his time during the period from 1834 to 1848. In 1848, on the first appearance of revolutionary symptoms in Austrian Poland, he hastened to Lemberg and thence, Oct. 14, to Vienna, where all that was done to strengthen the works of defence and organize the revolutionary forces, was due to his personal exertions. The disorderly flight in which, Oct. 25, a sally of the Viennese mobile guard, headed by himself, had resulted, wrung from him stern expressions of reproof, replied to by noisy accusations of treason, which, in spite of their absurdity, gained such influence that, but for fear of an insurrection on the part of the Polish legion, he would have been dragged before a court-martial. After his remarkable defence, Oct. 28, of the great barricade erected in the Jägernzeile, and after the opening of negotiations between the Vienna magistrates and Prince Windischgrätz, he disappeared. Suspicion, heightened by his mysterious escape, dogged him from Vienna to Pesth, where, on account of his prudent advice to the Hungarian government, not to allow the establishment of a special Polish legion, a Pole named Kolodjecki fired a pistol on the pretended traitor and severely wounded him. The war in Transylvania, with the command of which the Hungarian government intrusted Bem, leaving it, however, to his own ingenuity to find the armies with which to carry it on, forms the most important portion of his military life, and throws a great light upon the peculiar character of his generalship. Opening the first campaign toward the end of Dec. 1848, with a force of about 8,000 men, badly armed, hastily collected, and consisting of most heterogeneous elements—raw Magyar levies, Honveds, Viennese refugees, and a small knot of Poles, a motley crew reënforced in his progress through Transylvania by successive drafts from Szeklers, Saxons, Slaves and Roumanians—Bem had about 2 months later ended his campaign, vanquished Puchner with an Austrian army of 20,000 men, Engelhardt with the auxiliary force of 6,000 Russians, and Urban with his freebooters. Compelling the latter to take refuge in the Bukovina, and the two former to withdraw to Wallachia, he kept the whole of Transylvania save the small fortress of Karlsburg. Bold surprises, audacious manœuvres, forced marches, and the great confidence he knew how to inspire in his troops by his own example, by the skilful selection of covered localities, and by always affording artillery support at the decisive moment, proved him to be a first-rate general for the partisan and small mountain warfare of this first campaign. He also showed himself a master in the art of suddenly creating and disciplining an army; but being content with the first rough sketch of organization, and neglecting to form a nucleus of choice troops, which was a matter of prime necessity, his extemporized army was sure to vanish like a dream on the first serious disasters. During his hold of Transylvania he did himself honor by preventing the useless and impolitic cruelties contemplated by the Magyar commissioners. The policy of conciliation between the antagonist nationalities aided him in swelling his force, in a few months, to 40,000 or 50,000 men, well provided with cavalry and artillery. If, notwithstanding, some admirable manœuvres, the expedition to the Banat, which he engaged in with this numerically strong army, produced no lasting effect, the circumstance of his hands being tied by the coöperation of the incapable Hungarian general, must be taken into account. The irruption into Transylvania of large Russian forces, and the defeats consequently sustained by the Magyars, called Bem back to the theatre of his first campaign. After a vain attempt to create a diversion in the rear of the enemy, by the invasion of Moldavia, he returned to Transylvania, there to be completely routed, July 29, at Schässburg, by the 3 times stronger Russian forces under Lüders, escaping captivity himself only by a plunge into a morass from which some dispersed Magyar hussars happened to pick him up. Having collected the remainder of his forces, he stormed Hermannstadt for the second time, Aug. 5, but for want of reënforcements soon had to leave it, and after an unfortunate fight, Aug. 7, he retraced his steps to Hungary, where he arrived in time to witness the loss of the decisive battle at Temesvar. After a vain attempt to make a last stand at Lugos with what remained of the Magyar forces, he reëntered Transylvania, kept his ground there against overwhelming forces, until Aug. 19, when he was compelled to take refuge in the Turkish territory. With the purpose of opening to himself a new field of activity against Russia, Bem embraced the Mussulman faith, and was raised by the sultan to the dignity of a pasha, under the name of Amurath, with a command in the Turkish army; but, on the remonstrances of the European powers, he was relegated to Aleppo. Having there succeeded in repressing some sanguinary excesses committed during Nov. 1850, on the Christian residents by the Mussulman populace, he died about a month later, of a violent fever, for which he would allow no medical aid.

Bennigsen

BENNINGSEN, Levin August Theophile, count, a Russian general, born in Brunswick, Feb. 10, 1745, where his father served as colonel in the guards, died Oct. 3, 1826. As a page, he spent 5 years at the Hanoverian court of George II.; entered the Hanoverian army, and having advanced to the rank of captain in the foot guards, participated in the last campaign of the 7 years' war. His excessive passion for the fair sex at that time made more noise than his warlike exploits. In order to marry the daughter of the baron of Steinberg, the Hanoverian minister at the court of Vienna, he left the army, retired to his Hanoverian estate of Banteln, by dint of lavish expenditure got hopelessly in debt, and, on the death of his wife, resolved to restore his fortune by entering the Russian military service. Made a lieutenant-colonel by Catharine II., he served first under Romanzoff, against the Turks, and then under Suwaroff, against the rebel Pugatcheff. During a furlough granted to him he went to Hanover to carry off Mlle. von Schwiehelt, a lady renowned for her beauty. On his return to Russia, the protection of Romanzoff and Potemkin procured for him the command of a regiment. Having distinguished himself at the siege of Otchakov, in 1788, he was appointed brigadier-general. In the Polish campaign of 1793–'94, he commanded a corps of light troops; was created general after the affairs of Orschani and Solli; decided the victory of Vilna, by breaking up, at the head of the horse, the centre of the Polish army, and, in consequence of some bold surprises, successfully executed on the banks of the lower Niemen, was rewarded by Catharine II. with the order of St. Vladimir, a sabre of honor, and 200 serfs. During his Polish campaign he exhibited the qualities of a good cavalry officer—fire, audacity, and quickness—but not the higher attainments indispensable for the chief of an army. After the Polish campaign, he was despatched to the army in Persia, where, by means of a bombardment, lasting 10 days, he compelled Derbend, on the Caspian sea, to surrender. The cross of the order of St. George of the second class, was the last gift he received from Catharine II., after whose death he was recalled and disgraced by her successor. Count Pahlen, military governor of St. Petersburg, was organizing at that time the conspiracy by which Paul lost his life. Pahlen, knowing the reckless character of Benningsen, let him into the secret, and gave him the post of honor—that of leading the conspirators in the emperor's bedchamber. It was Benningsen who dragged Paul from the chimney, where he had secreted himself; and when the other conspirators hesitated, on Paul's refusal to abdicate, Benningsen exclaimed, "Enough talk," untied his own sash, rushed on Paul, and after a struggle, in which he was aided by the others, succeeded in strangling the victim. To shorten the process, Benningsen struck him on the head with a heavy silver snuff box. Immediately on the accession of Alexander I., Benningsen received a military command in Lithuania. At the commencement of the campaign of 1806–'7, he commanded a corps in the first army under Kamenski—the second being commanded by Buxhövden—he tried in vain to cover Warsaw against the French, was forced to retreat to Pultusk on the Narev, and there, Dec. 24, 1806, proved able to repulse an attack of Lannes and Bernadotte, his forces being greatly superior, since Napoleon, with his main force, had marched upon the second Russian army. Benningsen forwarded vain-glorious reports to the emperor Alexander, and, by dint of intrigues against Kamenski and Buxhövden, soon gained the supreme command of the army destined to operate against Napoleon. At the end of January, 1807, he made an offensive movement against Napoleon's winter quarters, and escaped by mere chance the snare Napoleon had laid for him, and then fought the battle of Eylau. Eylau having fallen on the 7th, the main battle, which, in order to break Napoleon's violent pursuit, Benningsen was forced to accept, occurred on Feb. 8. The tenacity of the Russian troops, the arrival of the Prussians under Lestocq, and the slowness with which the single French corps appeared on the scene of action, made the victory doubtful. Both parties claimed it, and at any rate, the field of Eylau—as Napoleon himself said—was the bloodiest among all his battles. Benningsen had *Te Deums* sung, and received from the czar a Russian order, a pension of 12,000 rubles, and a letter of congratulation, praising him as "the vanquisher of the never vanquished captain." In the spring, he intrenched himself at Heilsberg, and neglected to attack Napoleon, while part of the French army was still occupied with the siege of Dantzic; but, after the fall of Dantzic, and the junction of the French army, thought the time for attack had arrived. First delayed by Napoleon's vanguard, which mustered the third part only of his own numerical force, he was soon manœuvred back by Napoleon into his intrenched camp. There Napoleon attacked him in vain June 10, with but two corps and some battalions of the guard, but on the next day induced him to abandon his camp and beat a retreat. Suddenly, however, and without waiting for a corps of 28,000 men, which had already reached Tilsit, he returned to the offensive, occupied Friedland, and there drew up his army, with the river Alle in his rear, and the bridge of Friedland as his only line of retreat. Instead of quickly advancing, before Napoleon was able to concentrate his troops, he allowed himself to be amused for 5 or 6 hours by Lannes and Mortier, until, toward 5 o'clock, Napoleon had his forces ready, and then commanded the attack. The Russians were thrown on the river, Friedland was taken, and the bridge destroyed by the Russians themselves, although their whole right wing stood still on the opposite side. Thus the battle of Friedland, June 14, costing the Russian army above 20,000 men, was lost. It was said that Benningsen was at that time influenced by his wife, a Polish woman. During this whole campaign Benningsen committed fault upon fault, his whole conduct exhibiting a strange compound of rash imprudence and weak irresolution. During the campaign of 1812, his principal activity was displayed at the head-quarters of the emperor Alexander, where he intrigued against Barclay de Tolly, with a view to get his place. In the campaign of 1818, he commanded a Russian army of reserve, and was created count by Alexander, on the battle field of Leipsic. Receiving afterward the order to dislodge Davoust from Hamburg, he beleaguered it until Napoleon's abdication of April, 1814, put an end to hostilities. For the peaceful occupation of Hamburg, then effected by him, he claimed and received new honors and emoluments. After having held the command of the army of the south, in Bessarabia, from 1814 to 1818, he finally retired to his Hanoverian estate, where he died, having squandered most of his fortune, and leaving his children poor in the Russian service.

Beresford

BERESFORD, William Carr, viscount, British general, born in Ireland, Oct. 2, 1768, died in Kent, Jan. 8, 1854. The illegitimate son of George, 1st marquis of Waterford, he entered the army at the age of 16, and served in Nova Scotia until 1790. During this period, he lost one of his eyes from an accidental shot by a brother officer. He served at Toulon, Corsica, the West Indies (under Abercromby), the East Indies, and Egypt, under Baird. On his return, in 1800, he was made colonel by brevet. He subsequently was employed in Ireland, at the conquest of the Cape of Good Hope, and (as brigadier-general) against Buenos Ayres, in 1806, where he was compelled to surrender, but finally escaped. In 1807 he commanded the forces which captured Madeira, and was made governor of that island. In 1808 he became major-general, and, having arrived in Portugal with the English forces, was intrusted with the whole organization of the Portuguese army, including the militia. He was one of the commissioners for adjusting the terms of the celebrated convention of Cintra; was present during the retreat on, and battle of Corunna, where he covered the embarkation of Sir John Moore's troops; and, in March, 1809, was appointed marshal and generalissimo of the Portuguese army, soon raised by him into an excellent force, whether of attack or defence. He fought all through the Peninsular war, until its close in 1814, vigorously supporting Wellington. On the only considerable occasion, however, when he held the chief command, at the battle of Albuera, in 1811, he displayed very poor generalship, and the day would have been lost but for the act of a subaltern in disobedience of his orders. He took part in the victories of Salamanca, Vittoria, Bayonne, Orthes, and Toulouse. For these services he was created a field-marshal of Portugal, duke of Elvas, and marquis of Santo Campo. In 1810 he was chosen member of parliament for the county of Waterford (he never took his seat), and, in 1814, was created Baron Beresford of Albuera and Dungannon; in 1823 he was advanced to the dignity of viscount. In 1814 he went on a diplomatic mission to Brazil, where, in 1817, he repressed a conspiracy. On his return, he successively became lieutenant-general of the ordnance, general of the army, and (from 1828 to 1830) master-general of the ordnance. Having assisted Don Miguel, in 1828, he was deprived of his baton as field-marshal of Portugal. In politics, he was actively, though silently, a decided tory. His military efficiency chiefly consisted in his successful reorganization of the Portuguese troops, whom, by great skill and unwearied exertions, he finally rendered sufficiently firm and well disciplined to cope even with the French. In 1832 he married his cousin, Louisa, daughter of the archbishop of Tuam, and widow of Thomas Hope, the millionaire banker, and author of "Anastasius." He left no children, and the title became extinct at his death.

Berme

BĔRME, in fortification, a horizontal bank of ground left standing between the upper interior edge of the ditch and the exterior slope of the parapet of a work. It is generally made about 3 feet wide. Its principal object is to strengthen the parapet, and to prevent the earth of which it is composed from rolling down into the ditch, after heavy rain, thaw, &c. It may also serve sometimes as an exterior communication round the works. It is, however, not to be overlooked that the berme serves as a very convenient resting and collecting place for storming and scaling parties, in consequence of which it is entirely done away with in many systems of permanent fortification, and in others protected by a crenellated wall, so as to form a covered line of fire for infantry. In field fortification, or the construction of siege-batteries, with a ditch in front, a berme is generally unavoidable, as the scarp of the ditch is scarcely ever revetted, and without such an intermediate space, both scarp and parapet would soon crumble under the changes of the weather.

Bernadotte

BÉRŃADOTTE, Jean Baptiste Jules, marshal of the French empire, prince of Ponte Corvo, and, under the name of Charles XIV. John, king of Sweden and Norway, was born Jan. 26, 1764, at Pau, in the department of Basses Pyrénées, died March 8, 1844, in the royal palace at Stockholm. He was the son of a lawyer, and was educated for that profession, but his military impulses induced him to enlist secretly, in 1780, in the royal marines, where he had advanced to the grade of sergeant, when the French revolution broke out. Thence his advancement became rapid. In 1792 he served as colonel in Custine's army; commanded a demi-brigade in 1793; was in the same year, through Kleber's patronage, promoted to the rank of brigadier-general, and contributed, as general of division in the army of the Sambre and Meuse, under Kleber and Jourdan, to the victory of Fleurus, June 26, 1794, the success of Jülich, and the capitulation of Maestricht. He also did good service in the campaign of 1795–'96 against the Austrian generals Clairfait, Kray, and the archduke Charles. Ordered by the directory, at the beginning of 1797, to march 20,000 men as reënforcements to the Italian army, his first interview in Italy with Bonaparte decided their future relations. In spite of his natural greatness, Bonaparte entertained a petty and suspicious jealousy of the army of the Rhine and its generals. He understood at once that Bernadotte aspired to an independent career. The latter, on his part, was too much of a Gascon to justly appreciate the distance between a genius like Bonaparte and a man of abilities like himself. Hence their mutual dislike. During the invasion of Istria Bernadotte distinguished himself at the passage of the Tagliamento, where he led the vanguard, and at the capture of the fortress of Gradisca, March 19, 1797. After the so-called revolution of the 18th Fructidor, Bonaparte ordered his generals to collect from their respective divisions addresses in favor of that *coup d'état;* but Bernadotte first protested, then affected great reluctance in obeying, and at last sent an address to the directory, but quite the reverse of that asked for, and without conveying it through Bonaparte's hands. The latter on his journey to Paris, whither he repaired to lay before the directory the treaty of Campo Formio, visited and cajoled Bernadotte at his head-quarters at Udine, but the following day, through an order from Milan, deprived him of half his division of the army of the Rhine, and commanded him to march the other half back to France. After many remonstrances, compromises, and new quarrels, Bernadotte was at last prevailed upon to accept the embassy to Vienna. There, acting up to the instructions of Talleyrand, he assumed a conciliatory attitude which the Paris journals, inspired by Bonaparte and his brothers, declared to be full of royalist tendencies; expatiating, in proof of these charges, on the suppression of the tricolored flag at the entrance of his hotel, and of the republican cockade on the hats of his suite. Being reprimanded for this by the directory, Bernadotte, on April 18, 1798, the anniversary of a Viennese anti-Jacobin demonstration, hoisted the tricolored flag with the inscription, "Liberty, equality, fraternity," and had his hotel stormed by a Viennese mob, his flag burnt, and his own life endangered. The Austrian government declining to give the satisfaction demanded, Bernadotte withdrew to Rastadt with all his legation; but the directory, on the advice of Bonaparte, who had himself been instrumental in provoking the scandal, hushed up the affair and dropped their representative. Bernadotte's relationship to the Bonaparte family consequent upon his marriage, in Aug. 1798, with Mlle. Désirée Clary, the daughter of a Marseilles merchant, and Joseph Bonaparte's sister-in-law, seemed but to confirm his opposition to Napoleon. As commander of the army of observation on the upper Rhine, in 1799, he proved incompetent for the charge, and thus verified beforehand Napoleon's judgment at St. Helena, that he was a better lieutenant than general-in-chief. At the head of the war ministry, after the directorial émeute of the 30th Prairial, his plans of operation were less remarkable than his intrigues with the Jacobins, through whose reviving influence he tried to create for himself a personal following in the ranks of the army. Yet one morning, Sept. 13, 1799, he found his resignation announced in the *Moniteur* before he was aware that he had tendered it. This trick was played upon him by Siéyes and Roger Ducos, the directors allied to Bonaparte. While commanding the army of the west, he extinguished the last sparks of the Vendean war. After the proclamation of the empire, which made him a marshal, he was intrusted with the command of the army of Hanover. In this capacity as well as during his later command of the army of northern Germany, he took care to create for himself, among the northern people, a reputation for independence, moderation, and administrative ability. At the head of the corps stationed in Hanover, which formed the first corps of the grand army, he participated in the campaign of 1805 against the Austrians and Prussians. He was sent by Napoleon to Iglau, to observe the movements of Archduke Ferdinand in Bohemia; then, called back to Brünn, he, with his corps, was posted at the battle of Austerlitz in the centre between Soult and Lannes, and contributed to baffle the attempt of the allied right wing at outflanking the French army. On June 5, 1806, he was created prince of Ponte Corvo. During the campaign of 1806–'7 against Prussia, he commanded the first *corps d'armée*. He received from Napoleon the order to march from Naumburg upon Dornburg, while Davoust, also stationed at Naumburg, was to march upon Apolda; the order held by Davoust adding that, if Bernadotte had already effected his junction with him, they might conjointly march upon Apolda. Having reconnoitred the movements of the Prussians, and made sure that no enemy was to be encountered in the direction of Dornburg, Davoust proposed to Bernadotte a combined march upon Apolda, and even offered to place himself under his command. The latter, however, sticking to the literal interpretation of Napoleon's order, marched off in the direction of Dornburg without meeting an enemy during the whole day; while Davoust had alone to bear the brunt of the battle of Auerstädt, which, through Bernadotte's absence, ended in an indecisive victory. It was only the meeting of the fugitives of Auerstädt with the fugitives from Jena, and the strategetical combinations of Napoleon, that counteracted the consequences of the deliberate blunder committed by Bernadotte. Napoleon signed an order to bring Bernadotte before a court-martial, but on further consideration rescinded it. After the battle of Jena, Bernadotte defeated the Prussians at Halle, Oct. 17, conjointly with Soult and Murat, pursued the Prussian general Blücher to Lübeck, and contributed to his capitulation at Radzau, Nov. 17, 1806. He also defeated the Russians in the plains of Mohrungen, not far from Thorn, Jan. 25, 1807. After the peace of Tilsit, according to the alliance concluded between Denmark and Napoleon, French troops were to occupy the Danish islands, thence to act against Sweden. Accordingly, March 23, 1808, the very day when Russia invaded Finland, Bernadotte was commanded to move upon Seeland in order to penetrate with the Danes into Sweden, to dethrone its king, and to partition the country between Denmark and Russia; a strange mission for a man destined soon after to reign at Stockholm. He passed the Belt and arrived in Seeland at the head of 32,000 Frenchmen, Dutch, and Spaniards; 10,000 of the latter, however, contriving, by the assistance of an English fleet, to decamp under Gen. de la Romaña. Bernadotte undertook nothing and effected nothing during his stay in Seeland. Being recalled to Germany, there to assist in the new war between France and Austria, he received the command of the 9th corps, mainly composed of Saxons. The battle of Wagram, July 5 and 6, 1809, added new fuel to his misunderstandings with Napoleon. On the first day, Eugène Beauharnais, having debouched in the vicinity of Wagram, and dashed into the centre of the hostile reserves, was not sufficiently supported by Bernadotte, who engaged his troops too late, and too weakly. Attacked in front and flank, Eugène was roughly thrown back upon Napoleon's guard, and the first shock of the French attack was thus broken by Bernadotte's lukewarmness, who, meanwhile, had occupied the village of Adlerklau, in the centre of the French army, but somewhat in advance of the French line. On the following day, at 6 o'clock in the morning, when the Austrians advanced for a concentric attack, Bernadotte deployed before Adlerklau, instead of placing that village, strongly occupied, in his front. Judging, on the arrival of the Austrians, that this position was too hazardous, he fell back upon a plateau in the rear of Adlerklau, leaving the village unoccupied, so that it was immediately taken by Bellegarde's Austrians. The French centre being thus endangered, Massena, its commander, sent forward a division to retake Adlerklau, which division, however, was again dislodged by D'Aspre's grenadiers. At that moment, Napoleon himself arrived, took the supreme command, formed a new plan of battle, and baffled the manœuvres of the Austrians. Thus Bernadotte had again, as at Auerstädt, endangered the success of the day. On his part, he complained of Napoleon's having, in violation of all military rules, ordered Gen. Dupas, whose French division formed part of Bernadotte's corps, to act independently of his command. His resignation, which he tendered, was accepted, after Napoleon had become aware of an order of the day addressed by Bernadotte to his Saxons, in discord with the imperial bulletin. Shortly after his arrival at Paris, where he entered into intrigues with Fouché, the Walcheren expedition (July 30, 1809) caused the French ministry, in the absence of the emperor, to intrust Bernadotte with the defence of Antwerp. The blunders of the English rendered action on his part unnecessary; but he took the occasion to slip into a proclamation, issued to his troops, the charge against Napoleon of having neglected to prepare the proper means of defence for the Belgian coast. He was deprived of his command; ordered, on his return to Paris, to leave it for his princedom of Ponte Corvo, and, refusing to comply with that order, he was summoned to Vienna. After some lively altercations with Napoleon, at Schönbrunn, he accepted the general government of the Roman states, a sort of honorable exile.—The circumstances which brought about his election as crown prince of Sweden, were not fully elucidated until long after his death. Charles XIII., after the adoption of Charles August, duke of Augustenburg, as his son, and as heir to the Swedish throne, sent Count Wrede to Paris, to ask for the duke the hand of the princess Charlotte, daughter of Lucien Bonaparte. On the sudden death of the duke of Augustenburg, May 18, 1810, Russia pressed upon Charles XIII. the adoption of the duke of Oldenburg, while Napoleon supported the claims of Frederic VI., king of Denmark. The old king himself offered the succession to the brother of the late duke of Augustenburg, and despatched Baron Moerner to Gen. Wrede, with instructions enjoining the latter to bring Napoleon over to the king's choice. Moerner, however, a young man belonging to the very large party in Sweden which then expected the recovery of their country only from an intimate alliance with France, on his arrival at Paris, took upon himself, in connection with Lapie, a young French officer in the engineers, with Seigneul, the Swedish consul-general, and with Count Wrede himself, to present Bernadotte as candidate for the Swedish throne, all of them taking care to conceal their proceedings from Count Lagerbielke, the Swedish minister at the Tuileries, and all firmly convinced by a series of misunderstandings, artfully kept up by Bernadotte, that the latter was really the candidate of Napoleon. On June 29, accordingly, Wrede and Seigneul sent despatches to the Swedish minister of foreign affairs, both announcing that Napoleon would, with great pleasure, see the royal succession offered to his lieutenant and relative. In spite of the opposition of Charles XIII., the diet of the States, at Orebro, elected Bernadotte crown prince of Sweden, Aug. 21, 1810. The king was also compelled to adopt him as his son, under the name of Charles John. Napoleon reluctantly, and with bad grace, ordered Bernadotte to accept the offered dignity. Leaving Paris, Sept. 28, 1810, he landed at Helsingborg, Oct. 2, there abjured the Catholic profession, entered Stockholm Nov. 1, attended the assembly of the states, Nov. 5, and from that moment grasped the reins of the state. Since the disastrous peace of Frederikshamn, the idea prevailing in Sweden was the reconquest of Finland, without which, it was thought, as Napoleon wrote to Alexander, Feb. 28, 1811, "Sweden had ceased to exist," at least as a power independent of Russia. It was but by an intimate alliance with Napoleon that the Swedes could hope to recover that province. To this conviction Bernadotte owed his election. During the king's sickness, from March 17, 1811, to January 7, 1812, Charles John was appointed regent; but this was a question of etiquette only, since from the day of his arrival, he conducted all affairs. Napoleon, too much of a parvenu himself to spare the susceptibilities of his ex-lieutenant, compelled him, Nov. 17, 1810, in spite of a prior engagement, to accede to the continental system, and declare war against England. He suppressed his revenues as a French prince; declined to receive his despatches directly addressed to him, because he was not "a sovereign his equal;" and sent back the order of the Seraphim, bestowed upon the new-born king of Rome by Charles John. This petty chicanery afforded to the latter the pretext only for a course of action long decided upon. Hardly was he installed at Stockholm, when he admitted to a public audience the Russian general, Suchtelen, who was detested by the Swedes for having suborned the commander of Sweaborg, and even allowed that personage to be accredited as ambassador to the Swedish court. On Dec. 18, 1810, he held a conference with Czernicheff, in which he declared himself "to be anxious to win the good opinion of the czar," and to resign Finland forever, on the condition of Norway being detached from Denmark, and annexed to Sweden. By the same Czernicheff, he sent a most flattering letter to the czar Alexander. As he thus drew nearer to Russia, the Swedish generals who had overthrown Gustavus IV., and favored his own election, retired from him. Their opposition, reëchoed by the army and the people, threatened to become dangerous, when the invasion of Swedish Pomerania by a French division, Jan. 17, 1812—a measure executed by Napoleon on secret advice from Stockholm—afforded at last to Charles John a plausible pretext for officially declaring the neutrality of Sweden. Secretly, however, and behind the back of the diet, he concluded with Alexander an offensive alliance against France, signed March 27, 1812, at St. Petersburg, in which the annexation of Norway to Sweden was also stipulated.—Napoleon's declaration of war against Russia made Bernadotte for a time the arbiter of the destinies of Europe. Napoleon offered him, on the condition of his attacking Russia with 40,000 Swedes, Finland, Mecklenburg, Stettin, and all the territory between Stettin and Volgast. Bernadotte might have decided the campaign and occupied St. Petersburg before Napoleon arrived at Moscow. He preferred acting as the Lepidus of a triumvirate formed with England and Russia. Inducing the sultan to ratify the peace of Bucharest, he enabled the Russian admiral Tchitchakoff to withdraw his forces from the banks of the Danube and to operate on the flank of the French army. He also mediated the peace of Orebro, concluded July 18, 1812, between England on the one side, and Russia and Sweden on the other. Frightened at Napoleon's first successes, Alexander invited Charles John to an interview, at the same time offering him the command-in-chief of the Russian armies. Prudent enough to decline the latter offer, he accepted the invitation. On Aug. 27 he arrived at Abo, where he found Alexander very low-spirited and rather inclined to sue for peace. Having himself gone too far to recede, he steeled the wavering czar by showing that Napoleon's apparent successes must lead to his ruin. The conference resulted in the so-called treaty of Abo, to which a secret article was appended, giving the alliance the character of a family compact. In fact, Charles John received nothing but promises, while Russia, without the slightest sacrifice, secured the then invaluable alliance of Sweden. By authentic documents it has been recently proved that it depended at that time on Bernadotte alone to have Finland restored to Sweden; but the Gascon ruler, deluded by Alexander's flattery, that "one day the imperial crown of France, when fallen from Napoleon's brow, might rest upon his," already considered Sweden as a mere *pis-aller*. After the French retreat from Moscow, he formally broke off diplomatic relations with France, and when England guaranteed him Norway by treaty of March 18, 1813, he entered the coalition. Furnished with English subsidies, he landed in May, 1813, at Stralsund with about 25,000 Swedes and advanced toward the Elbe. During the armistice of June 4, 1813, he played an important part at the meeting in Trachenberg, where the emperor Alexander presented him to the king of Prussia, and where the general plan of the campaign was decided upon. As commander-in-chief of the army of the north, composed of Swedes, Russians, Prussians, English, Hanseatic, and north German troops, he kept up very equivocal connections with the French army, managed by an individual who frequented his head-quarters as a friend, and grounded on his presumption that the French would gladly exchange Napoleon's rule for Bernadotte's, if he only gave them proofs of forbearance and clemency. Consequently, he prevented the generals placed under his command from taking the offensive, and when Bülow twice, at Grossbeeren and Dennewitz, had vanquished the French despite his orders, stopped the pursuit of the beaten army. When Blücher, in order to force him to action, had marched upon the Elbe, and effected his junction with him, it was only the threat held out by Sir Charles Stewart, the English commissary in his camp, of stopping the supplies, that induced him to move on. Still the Swedes appeared on the battle field of Leipsic for appearance' sake only, and during the whole campaign lost not 200 men before the enemy. When the allies entered France, he retained the army of Sweden on her frontiers. After Napoleon's abdication, he repaired personally to Paris to remind Alexander of the promises held out to him at Abo. Talleyrand cut short his puerile hopes by telling the council of the allied kings, that "there was no alternative but Bonaparte or the Bourbons,—every thing else being a mere intrigue." Charles John having, after the battle of Leipsic, invaded the duchies of Holstein and Schleswig, at the head of an army composed of Swedes, Germans, and Russians, Frederic VI., king of Denmark, in the presence of vastly superior forces, was forced to sign, Jan. 14, 1814, the peace of Kiel, by which Norway was ceded to Sweden. The Norwegians, however, demurring to being so unceremoniously disposed of, proclaimed the independence of Norway under the auspices of Christian Frederic, crown prince of Denmark. The representatives of the nation assembling at Eidsvold, adopted, May 17, 1814, a constitution still in force, and the most democratic of modern Europe. Having put in motion a Swedish army and fleet, and seized upon the fortress of Frederickstadt, which commands the access to Christiania, Charles John entered into negotiation, agreed to consider Norway as an independent state and to accept the constitution of Eidsvold, carried the assent of the assembled storthing Oct. 7, and Nov. 10, 1814, repaired to Christiania, there, in his own and the king's name, to take the oath upon the constitution. —Charles XIII. expiring Feb. 5, 1818, Bernadotte, under the name of Charles XIV. John, was acknowledged by Europe as king both of Sweden and Norway. He now attempted to change the Norwegian constitution, to restore the abolished nobility, to secure to himself an absolute veto and the right of dismissing all officers, civil and military. This attempt gave rise to serious conflicts, and led, March 18, 1828, even to a cavalry charge upon the inhabitants of Christiania, who were celebrating the anniversary of their constitution. A violent outbreak seemed imminent, when the French revolution of 1830 caused the king to resort for the moment to conciliatory steps. Still Norway, for the acquisition of which he had sacrificed every thing, remained the constant source of embarrassments throughout his whole reign. After the first days of the French revolution of 1830, there existed a single man in Europe who thought the king of Sweden a fit pretender for the French throne, and that man was Bernadotte himself. More than once he repeated to the French diplomatic agents at Stockholm, "How does it happen that Laffitte has not thought of me?" The changed aspect of Europe, and, above all, the Polish insurrection, inspired him for a moment with the idea of making front against Russia. His offers in this sense to Lord Palmerston meeting with a flat refusal, he had to expiate his transitory idea of independence by concluding, June 23, 1834, a convention of alliance with the emperor Nicholas, which rendered him a vassal of Russia. From that moment his policy in Sweden was distinguished by encroachments on the liberty of the press, persecution of the crime of *lèse-majesté*, and resistance to improvements, even such as the emancipation of industry from the old laws of guilds and corporations. By playing upon the jealousies of the different orders constituting the Swedish diet, he long succeeded in paralyzing all movement, but the liberal resolutions of the diet of 1844, which were to be converted, according to the constitution, into laws by the diet of 1845, threatened his policy with final discomfiture, when his death occurred.—If Sweden, during the reign of Charles XIV., partly recovered from a century and a half of miseries and misfortunes, this was due not to Bernadotte, but exclusively to the native energies of the nation, and the agencies of a long peace.

Berthier

BERTHIER, Louis Alexandre, marshal of France, prince and duke of Neufchâtel and Valengin, prince of Wagram, born at Versailles, Nov. 20, 1753, murdered at Bamberg, June 1, 1815. He was educated as a soldier by his father, the chief of the corps of topographical engineers under Louis XVI. From the topographical bureau of the king, he passed to active service, first as lieutenant in the general staff, and subsequently as a captain of dragoons. In the American war of independence he served under Lafayette. In 1789, Louis XVI. appointed him major-general of the national guard of Versailles, and on Oct. 5 and 6, 1790, as well as Feb. 19, 1791, he did good service to the royal family. He perceived, however, that the revolution opened a field for military talents, and we find him, in turn, the chief of the general staff, under Lafayette, Luckner, and Custine. During the reign of terror he avoided suspicion by exhibiting zeal in the Vendean war. His personal bravery at the defence of Saumur, June 12, 1795, secured an honorable mention in the reports of the commissaries of the convention. After the 9th Thermidor, he was appointed chief of the general staff of Kellermann, and by causing the French army to take up the lines of Borghetto, contributed to arrest the advance of the enemy. Thus his reputation as a chief of the general staff was established before Bonaparte singled him out for that post. During the campaign of 1796-'7, he also proved himself a good general of division in the battles of Mondovi (April 22, 1796), Lodi, (May 10, 1796), Codogno (May 9, 1796), and Rivoli (Jan. 14, 1797). Of a weak character, of a tenacious activity, of a herculean strength of constitution, which allowed him to work during 8 consecutive nights, of a stupendous memory for every thing respecting the details of military operations, such as movements of corps, number of forces, cantonments, chiefs; of a promptitude always to be relied upon, orderly and exact, well versed in the use of maps, with an acute appreciation of the peculiarities of the ground, schooled to report in simple and lucid terms on the most complicated military movements, sufficiently experienced and quick-sighted to know on the day of action where to deliver the orders received, and himself attending to their execution, the living telegraph of his chief on the field of battle, and his indefatigable writing machine at the desk, he was the paragon of a staff officer for a general who reserved to himself all the superior staff functions. Despite his remonstrances, Bonaparte placed him, in 1798, at the head of the army destined to occupy Rome, there to proclaim the republic, and to take the pope prisoner. Equally unable to prevent the robberies committed at Rome by French generals, commissaries and purveyors, and to arrest the mutiny in the French ranks, he resigned his command to the hands of Massena, and repaired to Milan, where he fell in love with the beautiful Madame Visconti; his eccentric and lasting passion for whom caused him during the expedition to Egypt to be nicknamed the chief of the *faction des amoureux*, and cost him the best part of the 40,000,000 francs successively bestowed upon him by his imperial master. After his return from Egypt, he seconded Bonaparte's intrigues on the 18th and 19th Brumaire, and was appointed minister of war, a post he occupied till April 2, 1800. Acting again as chief of the general staff during the second Italian campaign, he contributed somewhat to the apparently false position in which Bonaparte had placed himself at Marengo, by crediting false reports as to the route and position of the Austrian army. After the victory, having concluded an armistice with Gen. Melas, he was employed on several diplomatic errands, and then reinstated in the war ministry, which he held till the proclamation of the empire. He then became completely attached to the person of the emperor, whom, with the title of major-general of the grand army, he accompanied as chief of the general staff during all his campaigns. Napoleon showered titles, dignities, emoluments, pensions, and donations upon him. May 19, 1808, he was created marshal of the empire, grand cordon of the legion of honor, grand huntsman of France. Oct. 17, 1806, he had the honor of stipulating with Mack the terms of the capitulation of Ulm. From the Prussian campaign of 1806, he carried home the dignity of sovereign prince of Neufchâtel and Valengin. In 1808 he was ordered to marry the princess Elizabeth Maria of Bavaria-Birkenfeld, the king of Bavaria's niece, and was made vice-constable of France. In 1809, Napoleon placed him as general-in-chief at the head of the grand army destined to operate from Bavaria against Austria. On April 6 he declared war, and on the 15th had already contrived to compromise the campaign. He divided the army into 3 parts, posting Davoust with half of the French forces at Regensburg, Massena with the other half at Augsburg, and between them, at Avensberg, the Bavarians, so that by quickly advancing, the archduke Charles might have vanquished these corps singly. The slowness of the Austrians and the arrival of Napoleon saved the French army. In his more congenial functions, however, and under the eyes of his master, he rendered excellent service in this same campaign, and added to his long list of titles that of prince of Wagram. During the Russian campaign he broke down even as chief of the general staff. After the conflagration of Moscow he proved unable even to interpret the orders of his master; but in spite of his urgent request to be allowed to return with Napoleon to France, the latter ordered him to stay with the army in Russia. The narrowness of his mind and his devotion to routine were now fully illustrated in the midst of the fearful odds against which the French had to struggle. True to his traditions, he gave to a battalion, sometimes to a company of the rear-guard, the same orders as if that rear-guard was still composed of 30,000 men; assigned posts to regiments and divisions which had long ceased to exist, and, to make up for his own want of activity, multiplied couriers and formulas. During the years 1813–'14 we find him again at his usual post. After the deposition of Napoleon had been proclaimed by the senate, Berthier, under false pretences, slunk away from his patron, sent in his own adhesion to the senate and the provisional government, even before Napoleon's abdication, and proceeded, at the head of the marshals of the empire, to Compiègne, there to address Louis XVIII. in the most servile language. On June 4, 1814, Louis XVIII. created him peer of France, and captain of a company of the newly established royal guard. His principality of Neufchâtel he resigned to the king of Prussia in exchange for a pension of 34,000 florins. On Napoleon's return from Elba, he followed Louis XVIII. to Ghent. However, having fallen into disgrace with the king in consequence of the concealment of a letter received from Napoleon, he withdrew to Bamberg, where, June 1, 1815, he was killed by 6 men in masks, who threw him out of one of the windows of his father-in-law's palace. His memoirs were published in Paris in 1826.

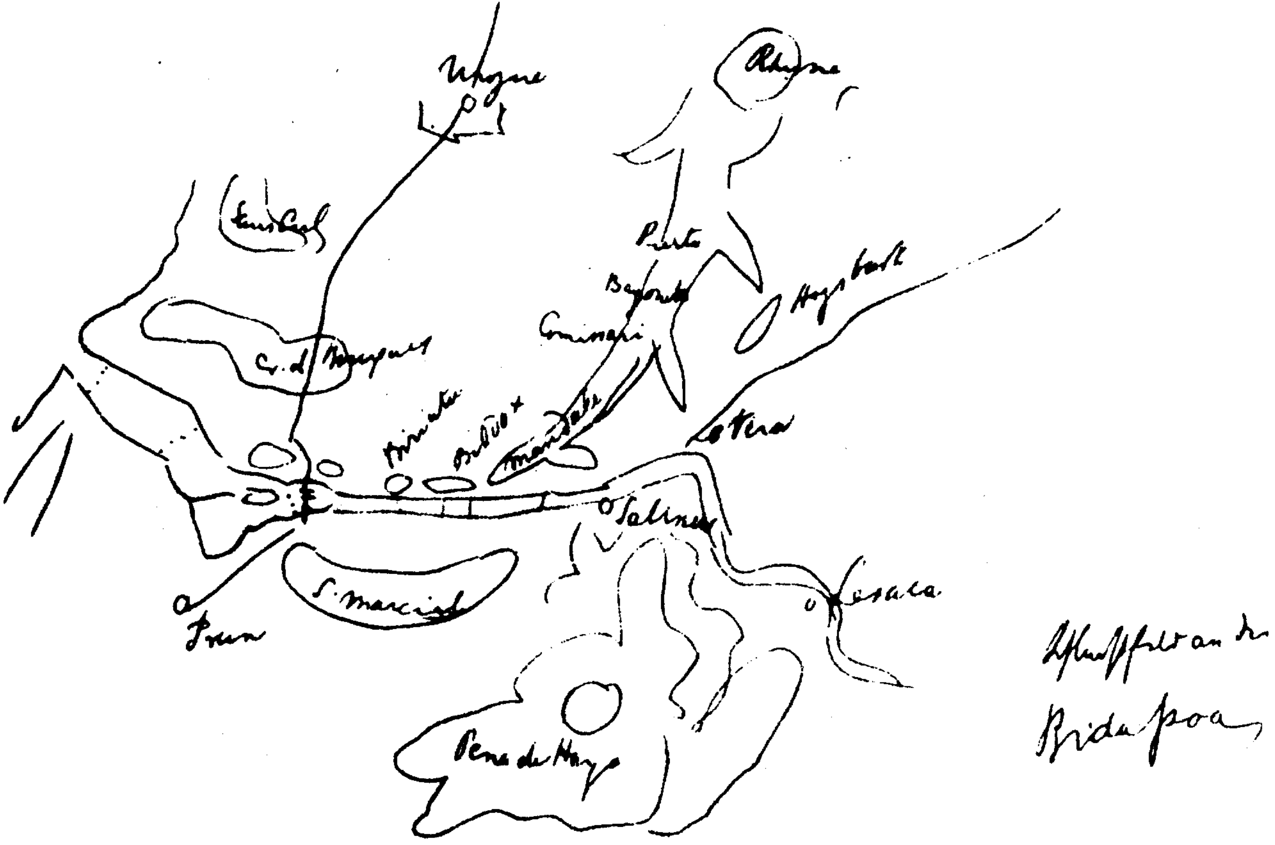
Bessières

BESSIÈRES, Jean Baptiste, marshal of the French empire, born at Praissac, in the department of Lot, Aug. 6, 1768, killed at Lutzen, March 1, 1813. He entered the constitutional guard of Louis XVI., in 1791, served as a non-commissioned officer in the mounted chasseurs of the Pyrénées, and soon after became a captain of chasseurs. After the victory of Roveredo, Sept. 4, 1796, Bonaparte promoted him on the battle-field to the rank of colonel. Commander of the guides of the general-in-chief during the Italian campaign of 1796–'97, colonel of the same corps in Egypt, he remained attached to it for the greater part of his life. In 1802, the rank of general of division was conferred upon him, and, in 1804, that of marshal of the empire. He fought at the battles of Roveredo, Rivoli, St. Jean d'Acre, Aboukir, Marengo—where he commanded the last decisive cavalry charge—Austerlitz, Jena, Eylau, and Friedland. Despatched in 1808 to assume the command of a division of 18,000 men stationed in the Spanish province of Salamanca, he found on his arrival that Gen. Cuesta had taken up a position between Valladolid and Burgos, thus threatening to intersect the line of communication of Madrid with France. Bessières attacked him and won the victory of Medina del Rio Secco. After the failure of the English Walcheren expedition, Napoleon substituted Bessières for Bernadotte, in command of the Belgian army. In the same year (1809), he was created duke of Istria. At the head of a cavalry division he routed the Austrian general, Hohenzollern, at the battle of Essling. During the Russian expedition he acted as chief commander of the mounted guard, and on the opening of the German campaign of 1813, as the commander of the French cavalry. He died on the battle-field while attacking the defile of Rippach, in Saxony, on the eve of the battle of Lutzen. His popularity with the common soldiers may be inferred from the circumstance that it was thought prudent to withhold the news of his death for some time from the army.

Bidassoa

BIDASSOA, a small river of the Basque provinces of Spain, noted for the battles fought upon its banks, between the French under Soult and the English, Spaniards, and Portuguese, under Wellington. After the defeat of Vittoria in 1813, Soult collected his troops in a position, the right of which rested on the sea opposite Fuenterrabia, having the Bidassoa in front, while the centre and left extended across several ridges of hills toward St. Jean de Luz. From this position he once attempted to relieve the blockaded garrison of Pampeluna, but was repulsed. San Sebastian, besieged by Wellington, was now hard pressed, and Soult resolved to raise the siege. From his position of the lower Bidassoa it was but 9 miles to Oyarzun, a village on the road to San Sebastian; and if he could reach that village the siege must be raised. Accordingly, toward the end of Aug. 1813, he concentrated 2 columns on the Bidassoa. The one on the left, under Gen. Clausel, consisting of 20,000 men and 29 guns, took a position on a ridge of hills opposite Vera (a place beyond which the upper course of the river was in the hands of the allies), while Gen. Reille with 18,000 men, and a reserve of 7,000 under Foy, took his station lower down, near the road from Bayonne to Irun. The French intrenched camp to the rear was held by D'Erlon with 2 divisions, to ward off any turning movement of the allied right. Wellington had been informed of Soult's plan, and had taken every precaution. The extreme left of his position, sheltered in front by the tidal estuary of the Bidassoa, was well intrenched, though but slightly occupied; the centre, formed by the extremely strong and rugged ridges of San Marcial, was strengthened with field-works, and held by Freyre's Spaniards, the 1st British division standing as a reserve on their left rear near the Irun road. The right wing, on the rocky descents of the Peña de Haya mountain, was held by Longa's Spaniards and the 4th Anglo-Portuguese division; Inglis's brigade of the 7th division connecting it with the light division at Vera, and with the troops detached still further to the right among the hills. Soult's plan was, that Reille should take San Marcial (which he intended forming into a bridge-head for ulterior operations), and drive the allies toward their right, into the ravines of Peña de Haya, thus clearing the high road for Foy, who was to advance along it straight on Oyarzun, while Clausel, after leaving a division to observe Vera, should pass the Bidassoa a little below that place, and drive whatever troops opposed him up the Peña de Haya, thus seconding and flanking Reille's attack. On the morning of Aug. 31, Reille's troops forded the river in several columns, carried the first ridge of San Marcial with a rush, and advanced toward the higher and commanding ridges of that group of hills. But in this difficult ground his troops, imperfectly managed, got into disorder; skirmishers and supports became mingled, and in some places crowded together in disordered groups, when the Spanish columns rushed down the hill and drove them back to the river. A second at-

Engels' Working Sketch for 'Bidassoa'



An example of the preparatory materials for NAC articles found among Engels' papers, this rough sketch is based on the battle plans and descriptions contained in W. F. P. Napier's History of the War in the Peninsula, Vol. 6, London, 1840). Napier's Explanatory Sketch No. 5 presents two battle plans for the area. The sketch is reproduced here from the Marx-Engels Werke, Vol. 14, facing page 258.

The caption found at bottom right is "Schlachtfeld an der Bidassoa" [Battlefield on the Bidassoa]. The other written labels present the following place names and topographical features, reading generally from left to right and top to bottom: Urogne, Rhune, Sans Culottes, Puerto, Bayonnette, Hogsback, Commissari, Croix des Bouquets, Biriatu, Bildox, Mandale, Vera, Salinas, Irun, San Marcial, Lesaca, Pena de Haya. The Bidassoa River is not labeled on the sketch.

(Note that the spelling of some of the names is not consistent in Napier and that several of them are misspelled in the MEW note on p. 747-748.)

tack was at first more successful, and brought the French up to the Spanish position; but then its force was spent, and another advance of the Spaniards drove them back into the Bidassoa in great disorder. Soult having learned in the mean time that Clausel had made good his attack, slowly conquering ground on Peña de Haya, and driving Portuguese, Spaniards, and British before him, was just forming columns out of Reille's reserves and Foy's troops for a third and final attack, when news came that D'Erlon had been attacked in his camp by strong forces. Wellington, as soon as the concentration of the French on the lower Bidassoa left no longer any doubt of the real point of attack, had ordered all troops in the hills on his extreme right to attack whatever was before them. This attack, though repulsed, was very serious, and might possibly be renewed. At the same time, a portion of the British light division was drawn up on the left bank of the Bidassoa so as to flank Clausel's advance. Soult now gave up the intended attack, and drew Reille's troops back across the Bidassoa. Those of Clausel were not extricated till late in the night, and after a severe struggle to force the bridge at Vera, the fords having become impassable by a heavy fall of rain on the same day, the allies took San Sebastian, except the citadel, by storm, and this latter post surrendered on Sept. 9.—The second battle of the Bidassoa took place Oct. 7, when Wellington forced the passage of that river. Soult's position was about the same as before; Foy held the intrenched camp of St. Jean de Luz, D'Erlon held Urdax and the camp of Ainhoa, Clausel was posted on a ridge connecting Urdax with the lower Bidassoa, and Reille stood along that river from Clausel's right down to the sea. The whole front was intrenched, and the French were still employed in strengthening their works. The British right stood opposed to Foy and D'Erlon; the centre, composed of Giron's Spaniards and the light division, with Longa's Spaniards and the 4th division in reserve, in all 20,000 men, faced Clausel; while on the lower Bidassoa Freyre's Spaniards, the 1st and 5th Anglo-Portuguese divisions, and the unattached brigade of Aylmer and Wilson, in all 24,000 men, were ready to attack Reille. Wellington prepared every thing for a surprise. His troops were drawn up well sheltered from the view of the enemy during the night before Oct. 7, and the tents of his camp were not struck. Beside, he had been informed by smugglers of the locality of 3 fords in the tidal estuary of the Bidassoa, all passable at low water, and unknown to the French, who considered themselves perfectly safe on that side. On the morning of the 7th, while the French reserves were encamped far to the rear, and of the one division placed in 1st line many men were told off to work at the redoubts, the 5th British division and Aylmer's brigade forded the tidal estuary, and marched toward the intrenched camp called the Sansculottes. As soon as they had passed to the other side, the guns from San Marcial opened, and 5 more columns advanced to ford the river. They had formed on the right bank before the French could offer any resistance; in fact, the surprise completely succeeded; the French battalions, as they arrived singly and irregularly, were defeated, and the whole line, including the key of the position, the hill of Croix des Bouquets, was taken before any reserves could arrive. The camp of Biriatu and Bildox, connecting Reille with Clausel, was turned by Freyre's taking the Mandale hill, and abandoned. Reille's troops retreated in disorder until they were stopped at Urogne by Soult, who arrived in haste with the reserves from Espelette. While still there, he was informed of an attack on Urdax; but he was not a moment in doubt about the real point of attack, and marched on the lower Bidassoa, where he arrived too late to restore the battle. The British centre, in the mean time, had attacked Clausel, and gradually forced his positions by both front and flank attacks. Toward evening he was confined to the highest point of the ridge, the Grande Rhune, and that hill he abandoned next day. The loss of the French was about 1,400, that of the allies about 1,600 killed and wounded. The surprise was so well managed that the real defence of the French positions had to be made by 10,000 men only, who, on being vigorously attacked by 33,000 allies, were driven from them before any reserves could come to their support.

Bivouac

BIVOUAC (Fr., probably from Ger. *bei* and *wache*), an encampment of troops by night in the open air, without tents, each soldier sleeping in his clothes, with his arms by his side. In the warfare of the ancients, the troops were protected by tents, as by movable cities. In mediæval times, castles and abbeys were opened to feudal and princely armies as they marched by. The popular masses who, impelled by religious enthusiasm, precipitated themselves in the crusades into Asia, formed rather a mob than an army, and all but the leading knights and princes and their immediate followers bivouacked upon the ground, like the wild nomadic tribes who roam the plains of Asia. With the return of regular warfare tented camps again reappeared, and were common in Europe during the last 2 centuries. But in the gigantic Napoleonic wars it was found that rapid movements were of more importance than the health of soldiers, and the luxury of tents disappeared from the fields of Europe, excepting sometimes in the case of the English armies. Entire armies bivouacked around fires, or, if the neighborhood of the enemy rendered it necessary, without fires, sleeping upon straw, or perhaps upon the naked ground, a part of the soldiers keeping guard. Among historical bivouacs none has been more celebrated by poetry and painting than that of the eve of the battle of Austerlitz.

Blenheim

BLENHEIM, or BLINDHEIM, a village about 23 miles from Augsburg, in Bavaria, the theatre of a great battle, fought Aug. 13, 1704, between the English and Austrians, under Marlborough and Prince Eugene, and the French and Bavarians, under Marshal Tallard, Marsin, and the elector of Bavaria. The Austrian states being menaced by a direct invasion on the side of Germany, Marlborough marched from Flanders to their assistance. The allies agreed to act on the defensive in Italy, the Netherlands, and the lower Rhine, and to concentrate all their available forces on the Danube. Marlborough, after storming the Bavarian intrenchments on the Schellenberg, passed the Danube, and effected his junction with Eugene, after which both at once marched to attack the enemy. They found him behind the Nebel brook, with the villages of Blenheim and Kitzingen strongly occupied in front of either flank. The French had the right wing, the Bavarians held the left. Their line was nearly 5 miles in extent, each army having its cavalry on its wings, so that a portion of the centre was held by both French and Bavarian cavalry. The position had not yet been properly occupied according to the then prevailing rules of tactics. The mass of the French infantry, 27 battalions, was crammed together in Blenheim, consequently in a position completely helpless for troops organized as they were then, and adapted for line fighting in an open country only. The attack of the Anglo-Austrians, however, surprised them in this dangerous condition, and Marlborough very soon drew all the advantages from it which the occasion offered. Having in vain attacked Blenheim, he suddenly drew his main strength toward his centre, and with it broke through the centre of his opponents. Eugene made light work of the thus isolated Bavarians, and undertook the general pursuit, while Marlborough, having completely cut off the retreat of the 18,000 Frenchmen blocked up in Blenheim, compelled them to lay down their arms. Among them was Marshal Tallard. The total loss of the Franco-Bavarians was 30,000 killed, wounded, and prisoners; that of the victors, about 11,000 men. The battle decided the campaign, Bavaria fell into the hands of the Austrians, and the prestige of Louis XIV. was gone. This battle is one of the highest tactical interest, showing very conspicuously the immense difference between the tactics of that time and those of our day. The very circumstance which would now be considered one of the greatest advantages of a defensive position, viz., the having 2 villages in front of the flanks, was with troops of the 18th century the cause of defeat. At that time, infantry was totally unfit for that skirmishing and apparently irregular fighting which now makes a village of masonry houses, occupied by good troops, almost impregnable. This battle is called in France, and on the continent generally, the battle of Hochstädt, from a little town of this name in the vicinity, which was already known to fame by a battle fought there on Sept. 20 of the preceding year.

Blindage

BLINDAGE, in fortification, any fixture for preventing the enemy from seeing what is going on in a particular spot. Such are, for instance, the fascines placed on the inner crest of a battery, and continued over the top of the embrasures; they make it more difficult, from a distance, to perceive any thing through the embrasures. More complete blindages are sometimes fixed to the embrasures, consisting of 2 stout boards, moving in slides from either side, so that the embrasure can be completely closed by them. If the line of fire is always directed to the same spot, they need not be opened out when the gun is run out, a hole being cut through them for the muzzle to pass. A movable lid closes the hole, when necessary. Other blindages are used to cover the gunners in a battery from vertical fire; they consist of plain strong timbers, one end of which is laid on the inner crest of the parapet, the other on the ground. Unless the shells are very heavy, and come down nearly in a vertical direction, they do not pass through such a blindage, but merely graze it, and go off at an angle. In trenching, some kinds of blindages are used to protect the sappers from fire; they are movable on trucks, and pushed forward as the work advances. Against musket fire, a wall of strong boards, lined on the outside with sheet iron, supported by strong timbers, is sufficient. Against cannon fire, large square boxes, or frames, filled with earth, sandbags, or fascines, are necessary. The most common kind of sappers' blindage consists of a very large gabion, or cylinder of wicker work, filled with fascines, which is rolled before them by the workmen. Wherever the sap has to be covered in from above, the blindage is constructed by laying square balks across the top, and covering them with fascines, and finally with earth, which renders them sufficiently bomb and shot proof.

Blücher

BLÜCHER, Gebhard Leberecht von, prince of Wahlstadt, Prussian field-marshal, born Dec. 16, 1742, at Rostock, in Mecklenburg-Schwerin, died at Krieblowitz, in Silesia, Sept. 12, 1819. He was sent in 1754, while a boy, to the island of Rügen, and there secretly enlisted in a regiment of Swedish hussars as ensign, to serve against Frederic II. of Prussia. Made prisoner in the campaign of 1758, he was, after a year's captivity, and after he had obtained his dismissal from the Swedish service, prevailed upon to enter the Prussian army. March 3, 1771, he was appointed senior captain of cavalry. In 1778, Capt. von Jägersfeld, a natural son of the margrave of Schwedt, being appointed in his stead to the vacant post of major, he wrote to Frederic II.: "Sire, Jägersfeld, who possesses no merit but that of being the son of the margrave of Schwedt, has been preferred to me. I beg your majesty to grant my dismissal." In reply Frederic II. ordered him to be shut up in prison, but when, notwithstanding a somewhat protracted confinement, he refused to retract his letter, the king complied with his petition in a note to this effect: "Capt. von Blücher may go to the devil." He now retired to Polish Silesia, married soon after, became a farmer, acquired a small estate in Pomerania, and, after the death of Frederic II., reentered his former regiment as major, on the express condition of his appointment being dated back to 1779. Some months later his wife died. Having participated in the bloodless invasion of Holland, he was appointed lieutenant-colonel, June 3, 1788. Aug. 20, 1790, he became colonel and commander of the 1st battalion of the regiment of hussars he had entered in 1760. In 1794 he distinguished himself during the campaign in the palatinate against republican France as a leader of the light cavalry. Being promoted, May 28, 1794, after the victorious affair of Kirrweiler, to the rank of major-general, the actions of Luxemburg, Kaiserslautern, Morschheim, Weidenthal, Edesheim, Edenkoben, secured him a rising reputation. While incessantly alarming the French by bold *coups de main* and successful enterprises, he never neglected keeping the head-quarters supplied with the best information as to the hostile movements. His diary, written during this campaign, and published in 1796, by Count Goltz, his adjutant, is considered, despite its illiterate style, as a classical work on vanguard service. After the peace of Basel he married again. Frederic William III., on his accession to the throne, appointed him lieutenant-general, in which quality he occupied, and administered as governor, Erfurt, Mühlhausen, and Münster. In 1805 a small corps was collected under him at Bayreuth to watch the immediate consequences for Prussia of the battle of Austerlitz, viz., the occupation of the principality of Anspach by Bernadotte's corps. In 1806 he led the Prussian vanguard at the battle of Auerstädt. His charge was, however, broken by the terrible fire of Davoust's artillery, and his proposal to renew it with fresh forces and the whole of the cavalry, was rejected by the king of Prussia. After the double defeat at Auerstädt and Jena, he retired down the Elbe, while Napoleon drove the main body of the Prussian army in one wild chase from Jena to Stettin. On his retrograde movement, Blücher took up the remnants of different corps, which swelled his army to about 25,000 men. His retreat to Lübeck, before the united forces of Soult, Bernadotte, and Mürat, forms one of the few honorable episodes in that epoch of German degradation. Since Lübeck was a neutral territory, his making the streets of that open town the theatre of a desperate fight, which exposed it to a 3 days' sack on the part of the French soldiery, afforded the subject of passionate censure; but under existing circumstances the important thing was to give the German people one example, at least, of stanch resistance. Thrown out of Lübeck, he had to capitulate in the plain of Radkow, Nov. 6, 1806, on the express condition that the cause of his surrender should be stated in writing to be "want of ammunition and provisions." Liberated on his word of honor, he repaired to Hamburg, there, in company with his sons, to kill time by card-playing, smoking, and drinking. Being exchanged for Gen. Victor, he was appointed governor-general of Pomerania; but one of the secret articles of the alliance concluded, Feb. 21, 1812, by Prussia with Napoleon, stipulated for Blücher's discharge from service, like that of Scharnhorst, and other distinguished Prussian patriots. To soothe this official disgrace, the king secretly bestowed upon him the handsome estate of Kunzendorf, in Silesia. During the years that marked the period of transition between the peace of Tilsit and the German war of independence, Scharnhorst and Gneisenau, the chiefs of the Tugendbund, desiring to extemporize a popular hero, chose Blücher. In propagating his fame among the masses, they succeeded so well, that when Frederic William III. called the Prussians to arms by the proclamation of March 17, 1813, they were strong enough to impose him upon the king as the general-in-chief of the Prussian army. In the well-contested, but for the allies unfortunate, battles of Lützen and Bautzen, he acted under the command of Wittgenstein. During the retreat of the allied armies from Bautzen to Schweidnitz, he lay in ambush at Haynau, from which he fell, with his cavalry, on the French advanced guard under Maison, who, in this affair, lost 1,500 men and 11 guns. Through this surprise Blücher raised the spirit of the Prussian army, and made Napoleon very cautious in pursuit. Blücher's command of an independent army dates from the expiration of the truce of Trachenberg, Aug. 10, 1813. The allied sovereigns had then divided their forces into 3 armies: the army of the north under Bernadotte, stationed along the lower Elbe; the grand army advancing through Bohemia, and the Silesian army, with Blücher as its commander-in-chief, supported by Gneisenau as the chief of his staff, and Müffling as his quartermaster-general. These 2 men, attached to him in the same quality until the peace of 1815, supplied all his strategetical plans. Blücher himself, as Müffling says, "understood nothing of the strategetical conduct of a war; so little indeed, that when a plan was laid before him for approval, even relating to some unimportant operation, he could not form any clear idea of it, or judge whether it was good or bad." Like many of Napoleon's marshals, he was unable to read the maps. The Silesian army was composed of 3 *corps d'armée:* 40,000 Russians, under Count Langeron; 16,000 men under Baron von Sacken; and a Prussian corps of 40,000 men under Gen. York. Blücher's position was extremely difficult at the head of this heterogeneous army. Langeron, who had already held independent commands, and demurred to serving under a foreign general, was, moreover, aware that Blücher had received secret orders to limit himself to the defensive, but was altogether ignorant that the latter, in an interview, on Aug. 11, with Barclay de Tolly, at Reichenbach, had extorted the permission to act according to circumstances. Hence Langeron thought himself justified in disobeying orders, whenever the general-in-chief seemed to him to swerve from the preconcerted plan, and in this mutinous conduct he was strongly supported by Gen. York. The danger arising from this state of things became more and more threatening, when the battle on the Katzbach secured Blücher that hold on his army which guided it to the gates of Paris. Marshal Macdonald, charged by Napoleon to drive the Silesian army back into the interior of Silesia, began the battle by attacking, Aug. 26, Blücher's outposts, stationed from Prausnitz to Kraitsch, where the Neisse flows into the Katzbach. The so-called battle on the Katzbach consisted, in fact, of 4 different actions, the first of which, the dislodging by a bayonet attack from a plateau behind a ridge on the right bank of the Neisse of about 8 French battalions, which constituted hardly one-tenth of the hostile force, led to results quite out of proportion to its original importance, in consequence of the fugitives from the plateau not being collected at Niedererayn, and left behind the Katzbach at Kraitsch, in which case their flight would have had no influence whatever on the rest of the French army; in consequence of different defeats inflicted at nightfall upon the enemy by Sacken's and Langeron's corps stationed on the left bank of the Neiss; in consequence of Marshal Macdonald, who commanded in person on the left bank, and had defended himself weakly till 7 o'clock in the evening against Langeron's attack, marching his troops at once after sunset to Goldberg, in such a state of exhaustion that they could no longer fight, and must fall into the enemy's hand; and, lastly, in consequence of the state of the season, violent rains swelling the otherwise insignificant streams the fugitive French had to traverse—the Neisse, the Katzbach, the Deichsel, and the Bober—to rapid torrents, and making the roads almost impracticable. Thus it occurred, that with the aid of the country militia in the mountains on the left flank of the Silesian army, the battle on the Katzbach, insignificant in itself, resulted in the capture of 18,000 to 20,000 prisoners, above 200 pieces of artillery, and more than 300 ammunition, hospital, and baggage wagons, with baggage, &c. After the battle Blücher did every thing to instigate his forces to exert their utmost strength in the pursuit of the enemy, justly representing to them that "with some bodily exertion they might spare a new battle." Sept. 3, he crossed the Neisse, with his army, and on the 4th proceeded by Bischofswerda to concentrate at Bautzen. By this move he saved the grand army, which, routed at Dresden, Aug. 27, and forced to retreat behind the Erzgebirge, was now disengaged; Napoleon being compelled to advance with reenforcements toward Bautzen, there to take up the army defeated on the Katzbach, and to offer battle to the Silesian army. During his stay in the S. E. corner of Saxony, on the right bank of the Elbe, Blücher, by a series of retreats and advances, always shunned battle when offered by Napoleon, but always engaged when encountering single detachments of the French army. Sept. 22, 23, and 24, he executed a flank march on the right of the enemy, advancing by forced marches to the lower Elbe, in the vicinity of the army of the north. Oct. 2, he bridged the Elbe at Elster with pontoons, and on the morning of the 3d his army defiled. This movement, not only bold, but even hazardous, inasmuch as he completely abandoned his lines of communication, was necessitated by supreme political reasons, and led finally to the battle of Leipsic, which, but for Blücher, the slow and overcautious grand army would never have risked. The army of the north, of which Bernadotte was the commander-in-chief, was about 90,000 strong, and it was, consequently, of the utmost importance that it should advance on Saxony. By means of the close connection which he maintained with Bülow and Wintzingerode, the commanders of the Prussian and Russian corps forming part of the army of the north, Blücher obtained the most convincing proofs of Bernadotte's coquetry with the French, and of the impossibility of inciting him to any activity, so long as he remained alone on a separate theatre of war. Bülow and Wintzingerode declared themselves ready to act in spite of Bernadotte, but to do so they wanted the support of 100,000 men. Hence Blücher's resolution to venture upon his flank march, in which he persisted despite the orders he had received from the sovereigns to draw near to them on the left, toward Bohemia. He was not to be diverted from his purpose through the obstacles which Bernadotte systematically threw in his way, even after the crossing of the Elbe by the Silesian army. Before leaving Bautzen, he had despatched a confidential officer to Bernadotte, to inform him that, since the army of the north was too weak to operate alone on the left bank of the Elbe, he would come with the Silesian army, and cross at Elster on Oct. 3; he therefore invited him to cross the Elbe at the same time, and to advance with him toward Leipsic. Bernadotte not heeding this message, and the enemy occupying Wartenburg opposite Elster, Blücher first dislodged the latter, and then, to protect himself in case Napoleon should fall upon him with his whole strength, began establishing an intrenched encampment from Wartenburg to Bleddin. Thence he pushed forward toward the Mulde. Oct. 7, in an interview with Bernadotte, it was arranged that both armies should march upon Leipsic. On the 9th, while the Silesian army was preparing for this march, Bernadotte, on the news of Napoleon's advance on the road from Meissen, insisted upon retreating behind the Elbe, and only consented to remain on its left bank on condition that Blücher would resolve to cross the Saale in concert with him, in order to take up a position behind that river. Although by this movement the Silesian army lost anew its line of communication, Blücher consented, since otherwise the army of the north would have been effectually lost for the allies. Oct. 10, the whole Silesian army stood united with the army of the north on the left bank of the Mulde, the bridges over which were destroyed. Bernadotte now declared a retreat upon Bernburg to have become necessary, and Blücher, with the single view of preventing him from crossing the right bank of the Elbe, yielded again on the condition that Bernadotte should cross the Saale at Wettin and take up a position there. Oct. 11, when his columns were just crossing the high road from Magdeburg to Halle, Blücher being informed that, in spite of his positive promise, Bernadotte had constructed no bridge at Wettin, resolved upon following that high road in forced marches. Napoleon, seeing that the northern and Silesian armies avoided accepting battle, which he had offered them by concentrating at Duben, and knowing that they could not avoid it without retreating across the Elbe; being at the same time aware that he had but 4 days left before he must meet the grand army, and thus be placed between two fires, undertook a march on the right bank of the Elbe toward Wittenberg, in order by this simulated movement to draw the northern and Silesian armies across the Elbe, and then strike a rapid blow on the grand army. Bernadotte, indeed, anxious for his lines of communication with Sweden, gave his army orders to cross without delay to the right bank of the Elbe, by a bridge constructed at Aken, while, on the same day, Oct. 13, he informed Blücher that the emperor Alexander had, for certain important reasons, put him (Blücher) under his orders. He consequently requested him to follow his movements on the right bank of the Elbe with the Silesian army, with the least possible delay. Had Blücher shown less resolution on this occasion and followed the army of the north, the campaign would have been lost, since the Silesian and northern armies, amounting together to about 200,000 men, would not have been present at the battle of Leipsic. He wrote in reply to Bernadotte, that, according to all his information, Napoleon had no intention whatever of removing the theatre of war to the right bank of the Elbe, but only intended to lead them astray. At the same time he conjured Bernadotte to give up his intended movement across the Elbe. Having, meanwhile, again and again solicited the grand army to push forward upon Leipsic, and offered to meet them there, he received at last, Oct. 15, the long-expected invitation. He immediately advanced toward Leipsic, while Bernadotte retreated toward Petersberg. On his march from Halle to Leipsic on Oct. 16, he routed at Möckern the 6th corps of the French army under Marmont, in a hotly contested battle, in which he captured 54 pieces of artillery. Without delay he sent accounts of the issue of this battle to Bernadotte, who was not present on the 1st day of the battle of Leipsic. On its 2d day, Oct. 17, Blücher dislodged the enemy from the right bank of the Parthe, with the exception of some houses and intrenchments near the Halle gate. On the 18th, at daybreak, he had a conference at Brachenfeld with Bernadotte, who declared he could not attack on the left bank of the Parthe unless Blücher gave him for that day 30,000 men of the Silesian army. Keeping the interest of the whole exclusively in view, Blücher consented without hesitation, but on the condition of remaining himself with these 30,000 men, and thus securing their vigorous coöperation in the attack. After the final victory of Oct. 19, and during the whole of Napoleon's retreat from Leipsic to the Rhine, Blücher alone gave him an earnest pursuit. While, on Oct. 19, the generals in command met the sovereigns in the market-place of Leipsic, and precious time was spent in mutual compliments, his Silesian army was already marching in pursuit of the enemy to Lützen. On his march from Lützen to Weissenberg, Prince William of Prussia overtook him, to deliver to him the commission of a Prussian field-marshal. The allied sovereigns had allowed Napoleon to gain a start which could never be recovered, but from Eisenach onward, Blücher found himself every afternoon in the room which Napoleon had left in the morning. When about to march upon Cologne, there to cross the Rhine, he was recalled and ordered to blockade Mentz on its left bank; his rapid pursuit as far as the Rhine having broken up the confederation of the Rhine, and disengaged its troops from the French divisions in which they were still enrolled. While the head-quarters of the Silesian army was established at Höchst, the grand army marched up the upper Rhine. Thus ended the campaign of 1813, whose success was entirely due to Blücher's bold enterprise and iron energy.—The allies were divided as to the plan of operations now to be followed; the one party proposing to stay on the Rhine, and there to take up a defensive position; the other to cross the Rhine and march upon Paris. After much wavering on the part of the sovereigns, Blücher and his friends prevailed, and the resolution was adopted to advance upon Paris in a concentric movement, the grand army being to start from Switzerland, Bülow from Holland, and Blücher, with the Silesian army, from the middle Rhine. For the new campaign, 3 additional corps were made over to Blücher, viz., Kleist's, the elector of Hesse's, and the duke of Saxe-Coburg's. Leaving part of Langeron's corps to invest Mentz, and the new reënforcements to follow as a second division, Blücher crossed the Rhine Jan. 1, 1814, on 3 points, at Mannheim, Caub, and Coblentz, drove Marmont beyond the Vosges and the Sarre, in the valley of the Moselle, posted York's corps between the fortresses of the Moselle, and with a force of 28,000 men, consisting of Sacken's corps and a division of Langeron's corps, proceeded by Vaucouleurs and Joinville to Brienne, in order to effect his junction with the grand army by his left. At Brienne, Jan. 29, he was attacked by Napoleon, whose forces mustered about 40,000, while York's corps was still detached from the Silesian army, and the grand army, 110,000 strong, had only reached Chaumont. Blücher had consequently to face the greatly superior forces of Napoleon, but the latter neither attacked him with his usual vigor, nor hindered his retreat to Trannes, save by some cavalry skirmishes. Having taken possession of Brienne, placed part of his troops in its vicinity, and occupied Dienville, La Rothière, and Chammenil, with 3 different corps, Napoleon would, on Jan. 30, have been able to fall upon Blücher with superior numbers, as the latter was still awaiting his reënforcements. Napoleon, however, kept up a passive attitude, while the grand army was concentrating by Bar-sur-Aube, and detachments of it were strengthening Blücher's right flank. The emperor's inactivity is explained by the hopes from the negotiations of the peace congress of Châtillon, which he had contrived to start, and through the means of which he expected to gain time. In fact, after the junction of the Silesian army with the grand army had been effected, the diplomatic party insisted that during the deliberations of the peace congress the war should be carried on as a feint only. Prince Schwartzenberg sent an officer to Blücher to procure his acquiescence, but Blücher dismissed him with this answer: "We must go to Paris. Napoleon has paid his visits to all the capitals of Europe; should we be less polite? In short, he must descend from the throne, and until he is hurled from it we shall have no rest." He urged the great advantages of the allies attacking Napoleon near Brienne, before he could bring up the remainder of his troops, and offered himself to make the attack, if he were only strengthened in York's absence. The consideration that the army could not subsist in the barren valley of the Aube, and must retreat if it did not attack, caused his advice to prevail. The battle was decided upon, but Prince Schwartzenberg, instead of bearing upon the enemy with the united force at hand, only lent Blücher the corps of the crown prince of Würtemberg (40,000 men), that of Gyulay (12,000), and that of Wrede (12,000). Napoleon, on his part, neither knew nor suspected any thing of the arrival of the grand army. When about 1 o'clock, Feb. 1, it was announced to him that Blücher was advancing, he would not believe it. Having made sure of the fact, he mounted his horse with the idea of avoiding the battle, and gave Berthier orders to this effect. When, however, between old Brienne and Rothière, he reached the young guard, who had got under arms on hearing the approaching cannonade, he was received with such enthusiasm that he thought fit to improve the opportunity, and exclaimed, "*L'artillerie en avant!*" Thus, about 4 o'clock, the affair of La Rothière commenced in earnest. At the first reverse, however, Napoleon no longer took any personal part in the battle. His infantry having thrown itself into the village of La Rothière, the combat was long and obstinate, and Blücher was even obliged to bring up his reserve. The French were not dislodged from the village till 11 o'clock at night, when Napoleon ordered the retreat of his army, which had lost 4,000 or 5,000 men in killed and wounded, 2,500 prisoners, and 53 cannon. If the allies, who were then only 6 days' march from Paris, had vigorously pushed on, Napoleon must have succumbed before their immensely superior numbers; but the sovereigns, still apprehensive of cutting Napoleon off from making his peace at the congress of Châtillon, allowed Prince Schwartzenberg, the commander-in-chief of the grand army, to seize upon every pretext for shunning a decisive action. While Napoleon ordered Marmont to return on the right bank of the Aube toward Ramern, and himself retired by a flank march upon Troyes, the allied army split into 2 armies, the grand army advancing slowly upon Troyes, and the Silesian army marching to the Marne, where Blücher knew he would find York, beside part of Langeron's and Kleist's corps, so that his aggregate forces would be swelled to about 50,000 men. The plan was for him to pursue Marshal Macdonald, who had meanwhile appeared on the lower Marne, to Paris, while Schwartzenberg was to keep in check the French main army on the Seine. Napoleon, however, seeing that the allies did not know how to use their victory, and sure of returning to the Seine before the grand army could have advanced far in the direction of Paris, resolved to fall upon the weaker Silesian army. Consequently, he left 20,000 men under Victor and Oudinot in face of the 100,000 men of the grand army, advanced with 40,000 men, the corps of Mortier and Ney, in the direction of the Marne, took up Marmont's corps at Nogent, and on Feb. 9 arrived with these united forces at Sézanne. Meanwhile Blücher had proceeded by St. Ouen and Sommepuis on the little road leading to Paris, and established, Feb. 9, his headquarters at the little town of Vertus. The disposition of his forces was this: about 10,000 men at his head-quarters; 18,000, under York, posted between Dormans and Château Thierry, in pursuit of Macdonald, who was already on the great post road leading to Paris from Epernay; 30,000 under Sacken, between Montmirail and La Ferté-Sous-Jouarre, destined to prevent the intended junction of Sebastiani's cavalry with Macdonald, and to cut off the passage of the latter at La Ferté-Sous-Jouarre; the Russian general, Olsuvieff, cantoned with 5,000 men at Champaubert. This faulty distribution, by which the Silesian army was drawn up in a very extended position, *en échelon*, resulted from the contradictory motives which actuated Blücher. On the one hand, he desired to cut off Macdonald, and prevent his junction with Sebastiani's cavalry; on the other hand, to take up the corps of Kleist and Kapzewitch, who were advancing from Chalons, and expected to unite with him on the 9th and 10th. The one motive kept him back, the other pushed him on. Feb. 9, Napoleon fell upon Olsuvieff, at Champaubert, and routed him. Blücher, with Kleist and Kapzewitch, who had meanwhile arrived, but without the greater part of their cavalry, advanced against Marmont, despatched by Napoleon, and followed him in his retreat upon La Fère Champenoise, but on the news of Olsuvieff's discomfiture, returned in the same night, with his 2 corps, to Bergères, there to cover the road to Chalons. After a successful combat on the 10th, Sacken had driven Macdonald across the Marne at Trilport, but hearing on the night of the same day of Napoleon's march to Champaubert, hastened back on the 11th toward Montmirail. Before reaching it he was, at Vieux Maisons, obliged to form against the emperor, coming from Montmirail to meet him. Beaten with great loss before York could unite with him, the two generals effected their junction at Viffort, and retreated, Feb. 12, to Château Thierry, where York had to stand a very damaging rear-guard engagement, and withdrew thence to Oulchy-la-Ville. Having ordered Mortier to pursue York and Sacken on the road of Fismes, Napoleon remained on the 13th at Château Thierry. Uncertain as to the whereabout of York and Sacken and the success of their engagements, Blücher had, from

Bergères, during the 11th and 12th, quietly watched Marmont posted opposite him at Etoges. When informed, on the 13th, of the defeat of his generals, and supposing Napoleon to have moved off in search of the grand army, he gave way to the temptation of striking a parting blow upon Marmont, whom he considered Napoleon's rear-guard. Advancing on Champaubert, he pushed Marmont to Montmirail, where the latter was joined on the 14th by Napoleon, who now turned against Blücher, met him at noon at Veauchamps, 20,000 strong, but almost without cavalry, attacked him, turned his columns with cavalry, and threw him back with great loss on Champaubert. During its retreat from the latter place, the Silesian army might have reached Etoges before it grew dark, without any considerable loss, if Blücher had not taken pleasure in the deliberate slowness of the retrograde movement. Thus he was attacked during the whole of his march, and one detachment of his forces, the division of Prince Augustus of Prussia, was again beset from the side streets of Etoges, on its passage through that town. About midnight Blücher reached his camp at Bergères, broke up, after some hours' rest, for Chalons, arrived there about noon, Feb. 15, and was joined by York's and Sacken's forces on the 16th and 17th. The different affairs at Champaubert, Montmirail, Château Thierry, Veauchamps, and Etoges, had cost him 15,000 men and 27 guns; Gneisenau and Müffling being alone responsible for the strategetical faults which led to these disasters. Leaving Marmont and Mortier to front Blücher, Napoleon, with Ney, returned in forced marches to the Seine, where Schwartzenberg had driven back Victor and Oudinot, who had retreated across the Yères, and there taken up 12,000 men under Macdonald, and some reënforcements from Spain. On the 16th they were surprised by the sudden arrival of Napoleon, followed on the 17th by his troops. After his junction with the marshals he hastened against Schwartzenberg, whom he found posted in an extended triangle, having for its summits Nogent, Montereau, and Sens. The generals under his command, Wittgenstein, Wrede, and the crown prince of Würtemberg, being successively attacked and routed by Napoleon, Prince Schwartzenberg took to his heels, retreated toward Troyes, and sent word to Blücher to join him, so that they might in concert give battle on the Seine. Blücher, meanwhile, strengthened by new reënforcements, immediately followed this call, and entered Méry Feb. 21, and waited there the whole of the 22d for the dispositions of the promised battle. He learned in the evening that an application for a truce had been made to Napoleon, through Prince Lichtenstein, who had met with a flat refusal. Instantly despatching a confidential officer to Troyes, he conjured Prince Schwartzenberg to give battle, and even offered to give it alone, if the grand army would only form a reserve; but Schwartzenberg, still more frightened by the news that Augereau had driven Gen. Bubna back into Switzerland, had already ordered the retreat upon Langres. Blücher understood at once that a retreat upon Langres would lead to a retreat beyond the Rhine; and, in order to draw Napoleon off from the pursuit of the dispirited grand army, resolved upon again marching straight in the direction of Paris, toward the Marne, where he could now expect to assemble an army of 100,000 men, Wintzingerode having arrived with about 25,000 men in the vicinity of Rheims, Bülow at Laon with 16,000 men, the remainder of Kleist's corps being expected from Erfurt, and the rest of Langeron's corps, under St. Priest, from Mentz. It was this second separation on the part of Blücher from the grand army, that turned the scale against Napoleon. If the latter had followed the retreating grand army instead of the advancing Silesian one, the campaign would have been lost for the allies. The passage of the Aube before Napoleon had followed him, the only difficult point in Blücher's advance, he effected by constructing a pontoon bridge at Auglure on Feb. 24. Napoleon, commanding Oudinot and Macdonald, with about 25,000 men, to follow the grand army, left Herbisse on the 26th, together with Ney and Victor, in pursuit of the Silesian army. On the advice sent by Blücher, that the grand army had now but the 2 marshals before it, Schwartzenberg stopped his retreat, took heart, turned round upon Oudinot and Macdonald, and beat them on the 27th and 28th. It was Blücher's intention to concentrate his army at some point as near as possible to Paris. Marmont, with his troops, was still posted at Sézanne, while Mortier was at Château Thierry. On Blücher's advance, Marmont retreated, united on the 26th with Mortier at La Ferté-Sous-Jouarre, thence to retire with the latter upon Meaux. Blücher's attempt, during 2 days, to cross the Ourcq, and, with a strongly advanced front, to force the 2 marshals to battle, having failed, he was now obliged to march on the right bank of the Ourcq. He reached Oulchy-le-Château March 2, learned in the morning of the 3d the capitulation of Soissons, which had been effected by Bülow and Wintzingerode, and, in the course of the same day, crossed the Aisne, and concentrated his whole army at Soissons. Napoleon, who had crossed the Marne at La Ferté-Sous-Jouarre, 2 forced marches behind Blücher, advanced in the direction of Château Thierry and Fismes, and, having passed the Vesle, crossed the

Aisne at Berry-au-Bac, March 6, after the recapture of Rheims by a detachment of his army. Blücher originally intended to offer battle behind the Aisne, on Napoleon's passage of that river, and had drawn up his troops for that purpose. When he became aware that Napoleon took the direction of Fismes and Berry-au-Bac, in order to pass the Silesian army by the left, he decided upon attacking him from Craone on the flank, in an oblique position, immediately after his debouching from Berry-au-Bac, so that Napoleon would have been forced to give battle with a defile in his rear. Having already posted his forces, with the right wing on the Aisne, with the left on the Lette, half way from Soissons to Craone, he resigned this excellent plan on making sure that Napoleon had, on the 6th, been allowed by Wintzingerode to pass Berry-au-Bac unmolested, and had even pushed a detachment on the road to Laon. He now thought it necessary to accept no decisive battle except at Laon. To delay Napoleon, who, by Corbeny, on the causeway from Rheims, could reach Laon as soon as the Silesian army from Craone, Blücher posted the corps of Woronzoff between the Aisne and the Lette, on the strong plateau of Craone, while he despatched 10,000 horse under Wintzingerode, to push on by Fetieux toward Corbeny, with the order to fall upon the right flank and rear of Napoleon, as soon as the latter should be engaged in attacking Woronzoff. Wintzingerode failing to execute the manœuvre intrusted to him, Napoleon drove Woronzoff from the plateau on the 7th, but himself lost 8,000 men, while Woronzoff escaped with the loss of 4,700, and proved able to effect his retreat in good order. On the 8th, Blücher had concentrated his troops at Laon, where the battle must decide the fate of both armies. Apart from his numerical superiority, the vast plain before Laon was peculiarly adapted for deploying the 20,000 horse of the Silesian army, while Laon itself, situated on the plateau of a detached hill, which has on every side a fall of 12, 16, 20 to 30 degrees, and at the foot of which lie 4 villages, offered great advantages for the defence as well as the attack. On that day, the left French wing, led by Napoleon himself, was repulsed, while the right wing, under Marmont, surprised in its bivouacs at nightfall, was so completely worsted, that the marshal could not bring his troops to a halt before reaching Fismes. Napoleon, completely isolated with his wing, numbering 35,000 men only, and cooped up in a bad position, must have yielded before far superior numbers flushed with victory. Yet on the following morning, a fever attack and an inflammation of the eyes disabled Blücher, while Napoleon yet remained in a provocatory attitude, in the same position, which so far intimidated the men who now directed the operations, that they not only stopped the advance of their own troops which had already begun, but allowed Napoleon to quietly retire at nightfall to Soissons. Still the battle of Laon had broken his forces, physically and morally. He tried in vain by the sudden capture, on March 13, of Rheims, which had fallen into the hands of St. Priest, to restore himself. So fully was his situation now understood, that when he advanced, on the 17th and 18th, on Arcis-sur-Aube, against the grand army, Schwartzenberg himself, although but 80,000 strong against the 25,000 under Napoleon, dared to stand and accept a battle, which lasted through the 20th and 21st. When Napoleon broke it off, the grand army followed him up to Vitry, and united in his rear with the Silesian army. In his despair, Napoleon took a last refuge in a retreat upon St. Dizier, pretending thus to endanger, with his handful of men, the enormous army of the allies, by cutting off its main line of communication and retreat between Langres and Chaumont; a movement replied to on the part of the allies by their onward march to Paris. On March 30 took place the battle before Paris, in which the Silesian army stormed Montmartre. Though Blücher had not recovered since the battle of Laon, he still appeared at the battle for a short time, on horseback, with a shade over his eyes, but, after the capitulation of Paris, laid down his command, the pretext being his sickness, and the real cause the clashing of his open-mouthed hatred against the French with the diplomatic attitude which the allied sovereigns thought fit to exhibit. Thus he entered Paris, March 31, in the capacity of a private individual. During the whole campaign of 1814, he alone among the allied army represented the principle of the offensive. By the battle of La Rothière he baffled the Châtillon pacificators; by his resolution at Méry he saved the allies from a ruinous retreat; and by the battle of Laon he decided the first capitulation of Paris.—After the first peace of Paris he accompanied the emperor Alexander and King Frederic William of Prussia on their visit to England, where he was fêted as the hero of the day. All the military orders of Europe were showered upon him; the king of Prussia created for him the order of the iron cross; the prince regent of England gave him his portrait, and the university of Oxford the academical degree of LL. D. In 1815 he again decided the final campaign against Napoleon. After the disastrous battle of Ligny, June 16, though now 73 years of age, he prevailed upon his routed army to form anew and march on the heels of their victor, so as to be able to appear in the evening of June 18 on the battle field of Waterloo, an exploit unprecedented in the history of war. His pursuit, after the battle of Waterloo, of the French fugitives, from Waterloo to Paris, possesses one parallel only, in Napoleon's equally remarkable pursuit of the Prussians from Jena to Stettin. He now entered Paris at the head of his army, and even had Müffling, his quartermaster-general, installed as the military governor-general of Paris. He insisted upon Napoleon's being shot, the bridge of Jena blown up, and the restitution to their original owners of the treasures plundered by the French in the different capitals of Europe. His first wish was baffled by Wellington, and the second by the allied sovereigns, while the last was realized. He remained at Paris 3 months, very frequently attending the gambling tables for *rouge-et-noir*. On the anniversary of the battle on the Katzbach, he paid a visit to Rostock, his native place, where the inhabitants united to raise a public monument in his honor. On the occurrence of his death the whole Prussian army went into mourning for 8 days. *Le vieux diable*, as he was nicknamed by Napoleon, "Marshal Forwards," as he was styled by the Russians of the Silesian army, was essentially a general of cavalry. In this speciality he excelled, because it required tactical acquirements only, but no strategetical knowledge. Participating to the highest degree in the popular hatred against Napoleon and the French, he was popular with the multitude for his plebeian passions, his gross common sense, the vulgarity of his manners, and the coarseness of his speech, to which, however, he knew, on fit occasions, how to impart a touch of fiery eloquence. He was the model of a soldier. Setting an example as the bravest in battle and the most indefatigable in exertion; exercising a fascinating influence on the common soldier; joining to his rash bravery a sagacious appreciation of the ground, a quick resolution in difficult situations, stubbornness in defence equal to his energy in the attack, with sufficient intelligence to find for himself the right course in simpler combinations, and to rely upon Gneisenau in those which were more intricate, he was the true general for the military operations of 1813–'15, which bore the character half of regular and half of insurrectionary warfare.

Blum

BLUM, Robert, one of the martyrs of the German revolution, born at Cologne, Nov. 10, 1807, executed in Vienna, Nov. 9, 1848. He was the son of a poor journeyman cooper, who died in 1815, leaving 3 children and a distressed widow, who, in 1816, again married a common lighterman. This second marriage proved unhappy, and the family misery rose to a climax in the famine of 1816–'17. In 1819 young Robert, belonging to the Catholic confession, obtained an employment as mass-servant; then became apprentice to a gilder, then to a girdler, and, according to the German custom, became a travelling journeyman, but was not up to the requirements of his handicraft, and, after a short absence, had to return to Cologne. Here he found occupation in a lantern manufactory, ingratiated himself with his employer, was by him promoted to a place in the counting-house, had to accompany his patron on his journeys through the southern states of Germany, and, in the year 1829–'30, resided with him at Berlin. During this period he endeavored, by assiduous exertion, to procure a sort of encyclopædic knowledge, without however betraying a marked predilection or a signal endowment for any particular science. Summoned, in 1830, to the military service, to which every Prussian subject is bound, his relations with his protector were broken off. Dismissed from the army after a six weeks' service, and finding his employment gone, he returned again to Cologne, in almost the same circumstances in which he had twice left it. There the misery of his parents, and his own helplessness, induced him to accept, at the hands of Mr. Ringelhardt, the manager of the Cologne theatre, the office of man of all work of the theatre. His connection with the stage, although of a subaltern character, drew his attention to dramatic literature, while the political excitement which the French revolution of July had caused throughout Rhenish Prussia, allowed him to mingle in certain political circles, and to insert poetry in the local papers. In 1831, Ringelhardt, who had meanwhile removed to Leipsic, appointed Blum cashier and secretary of the Leipsic theatre, a post he held until 1847. From 1831 to 1837 he made contributions to the Leipsic family papers, such as the *Comet*, the *Abendzeitung*, &c., and published a "Theatrical Cyclopædia," the "Friend of the Constitution," an almanac entitled *Vorwärts*, &c. His writings are impressed with the stamp of a certain household mediocrity. His later productions were, moreover, spoiled by a superfluity of bad taste. His political activity dates from 1837, when, as the spokesman of a deputation of Leipsic citizens, he handed over a present of honor to 2 opposition members of the Saxon estates. In 1840 he became one of the founders, and in 1841 one of the directors of the Schiller associations, and of the association of German authors. His contributions to the *Sächsische Vaterlandsblätter*, a political journal, made him the most popular journalist of Saxony, and the particular object of government persecution. German catholicism, as it was called, found a warm partisan in him. He founded the German Catholic church at Leipsic, and became its spiritual director in 1845. On Aug. 12, 1845, when an immense meeting of armed citizens and students, assembling before the riflemen's barracks at Leipsic, threatened to storm it in order to revenge the murderous onslaught committed the day before by a company of the riflemen, Blum, by his popular eloquence, persuaded the excited masses not to deviate from legal modes of resistance, and himself took the lead in the proceedings for legal redress. In reward for his exertions, the Saxon government renewed its persecutions against him, which, in 1847, ended in the suppression of the *Vaterlandsblätter*. On the outbreak of the revolution of February, 1848, he became the centre of the liberal party of Saxony, founded the "Fatherland's Association," which soon mustered above 40,000 members, and generally proved an indefatigable agitator. Sent by the city of Leipsic to the "preliminary parliament," he there acted as vice-chairman, and by preventing the secession *en masse* of the opposition, contributed to sustain that body. After its dissolution, he became a member of the committee it left behind, and afterward of the Frankfort parliament, in which he was the leader of the moderate opposition. His political theory aimed at a republic as the summit of Germany, but as its base the different traditionary kingdoms, dukedoms, &c.; since, in his opinion, the latter alone were able to preserve, intact, what he considered a peculiar beauty of German society, the independent development of its different orders. As a speaker he was plausible, rather theatrical, and very popular. When the news of the Vienna insurrection reached Frankfort, he was charged, in company with some other members of the German parliament, to carry to Vienna an address drawn up by the parliamentary opposition. As the spokesman of the deputation, he handed the address to the municipal council of Vienna, Oct. 17, 1848. Having enrolled himself in the ranks of the students' corps, and commanded a barricade during the fight, he sat, after the capture of Vienna by Windischgrätz, quietly conversing in a hotel, when the hotel was surrounded by soldiers, and he himself made prisoner. Placed before a court-martial, and not condescending to deny any of his speeches or acts, he was sentenced to the gallows, a punishment commuted to that of being shot. This execution took place at daybreak, in the Brigittenau.

Bolivar y Ponte

BOLIVAR Y PONTE, Simon, the "liberator" of Colombia, born at Caracas, July 24, 1783, died at San Pedro, near Santa Martha, Dec. 17, 1830. He was the son of one of the *familias Mantuanas*, which, at the time of the Spanish supremacy, constituted the creole nobility in Venezuela. In compliance with the custom of wealthy Americans of those times, at the early age of 14 he was sent to Europe. From Spain he passed to France, and resided for some years in Paris. In 1802 he married in Madrid, and returned to Venezuela, where his wife died suddenly of yellow fever. After this he visited Europe a second time, and was present at Napoleon's coronation as emperor, in 1804, and at his assumption of the iron crown of Lombardy, in 1805. In 1809 he returned home, and despite the importunities of Joseph Felix Ribas, his cousin, he declined to join in the revolution which broke out at Caracas, April 19, 1810; but, after the event, he accepted a mission to London to purchase arms and solicit the protection of the British government. Apparently well received by the marquis of Wellesley, then secretary for foreign affairs, he obtained nothing beyond the liberty to export arms for ready cash with the payment of heavy duties upon them. On his return from London, he again withdrew to private life, until, Sept. 1811, he was prevailed upon by Gen. Miranda, then commander-in-chief of the insurgent land and sea forces, to accept the rank of lieutenant-colonel in the staff, and the command of Puerto Cabello, the strongest fortress of Venezuela. The Spanish prisoners of war, whom Miranda used regularly to send to Puerto Cabello, to be confined in the citadel, having succeeded in overcoming their guards by surprise, and in seizing the citadel, Bolivar, although they were unarmed, while he had a numerous garrison and large magazines, embarked precipitately in the night, with 8 of his officers, without giving notice to his own troops, arrived at daybreak at La Guayra, and retired to his estate at San Mateo. On becoming aware of their commander's flight, the garrison retired in good order from the place, which was immediately occupied by the Spaniards under Monteverde. This event turned the scale in favor of Spain, and obliged Miranda, on the authority of the congress, to sign the treaty of Vittoria, July 26, 1812, which restored Venezuela to the Spanish rule. On July 30 Miranda arrived at La Guayra, where he intended to embark on board an English vessel. On his visit to the commander of the place, Col. Manuel Maria Casas, he met with a numerous company, among whom were Don Miguel Peña and Simon Bolivar, who persuaded him to stay, for one night at least, in Casas's house. At 2 o'clock in the morning, when Miranda was soundly sleeping, Casas, Peña, and Bolivar entered his room, with 4 armed soldiers, cautiously seized his sword and pistol, then awakened him, abruptly told him to rise and dress himself, put him into irons, and had him finally surrendered to Monteverde, who dispatched him to Cadiz, where, after some years' captivity, he died in irons. This act, committed on the pretext that Miranda had betrayed his country by the capitulation of Vittoria, procured for Bolivar Monteverde's peculiar favor, so that when he demanded his passport, Monteverde declared "Col. Bolivar's request should be complied with, as a reward for his having served the king of Spain by delivering up Miranda." He was thus allowed to sail for Curaçoa, where he spent 6 weeks, and proceeded, in company with his cousin Ribas, to the little republic of Carthagena. Previous to their arrival, a great number of soldiers, who had served under Gen. Miranda, had fled to Carthagena. Ribas proposed to them to undertake an expedition against the Spaniards in Venezuela, and to accept Bolivar as their commander-in-chief. The former proposition they embraced eagerly; to the latter they demurred, but at last yielded, on the condition of Ribas being the second in command. Manuel Rodriguez Torrices, the president of the republic of Carthagena, added to the 300 soldiers thus enlisted under Bolivar, 500 men under the command of his cousin, Manuel Castillo. The expedition started in the beginning of Jan. 1813. Dissensions as to the supreme command breaking out between Bolivar and Castillo, the latter suddenly decamped with his grenadiers. Bolivar, on his part, proposed to follow Castillo's example, and return to Carthagena, but Ribas persuaded him at length to pursue his course at least as far as Bogota, at that time the seat of the congress of New Granada. They were well received, supported in every way, and were both made generals by the congress, and, after having divided their little army into 2 columns, they marched by different routes upon Caracas. The further they advanced, the stronger grew their resources; the cruel excesses of the Spaniards acting everywhere as the recruiting sergeants for the army of the independents. The power of resistance on the part of the Spaniards was broken, partly by the circumstance of ¾ of their army being composed of natives, who bolted on every encounter to the opposite ranks, partly by the cowardice of such generals as Tiscar, Cagigal, and Fierro, who, on every occasion, deserted their own troops. Thus it happened that San Iago Mariño, an ignorant youth, had contrived to dislodge the Spaniards from the provinces of Cumana and Barcelona, at the very time that Bolivar was advancing through the western provinces. The only serious resistance, on the part of the Spaniards, was directed against the column of Ribas, who, however, routed Gen. Monteverde at Lostaguanes, and forced him to shut himself up in Puerto Cabello with the remainder of his troops. On hearing of Bolivar's approach, Gen. Fierro, the governor of Caracas, sent deputies to propose a capitulation, which was concluded at Vittoria; but Fierro, struck by a sudden panic, and not expecting the return of his own emissaries, secretly decamped in the night, leaving more than 1,500 Spaniards at the discretion of the enemy. Bolivar was now honored with a public triumph. Standing in a triumphal car, drawn by 12 young ladies, dressed in white, adorned with the national colors, and all selected from the first families of Caracas, Bolivar, bareheaded, in full uniform, and wielding a small baton in his hand, was, in about half an hour, dragged from the entrance of the city to his residence. Having proclaimed himself "dictator and liberator of the western provinces of Venezuela"—Mariño had assumed the title of "dictator of the eastern provinces"—he created "the order of the liberator," established a choice corps of troops under the name of his body-guard, and surrounded himself with the show of a court. But, like most of his countrymen, he was averse to any prolonged exertion, and his dictatorship soon proved a military anarchy, leaving the most important affairs in the hands of favorites, who squandered the finances of the country, and then resorted to odious means in order to restore them. The new enthusiasm of the people was thus turned to dissatisfaction, and the scattered forces of the enemy were allowed to recover. While, in the beginning of Aug. 1813, Monteverde was shut up in the fortress of Puerto Cabello, and the Spanish army reduced to the possession of a small strip of land in the north-western part of Venezuela, 3 months later, in December, the liberator's prestige was gone, and Caracas itself threatened, by the sudden appearance in its neighborhood of the victorious Spaniards under Boves. To strengthen his tottering power, Bolivar assembled, Jan. 1, 1814, a junta of the most influential inhabitants of Caracas, declaring himself to be unwilling any longer to bear the burden of dictatorship. Hurtado Mendoza, on the other hand, argued, in a long oration, "the necessity of leaving the supreme power in the hands of Gen. Bolivar, until the congress of New Granada could meet, and Venezuela be united under one government." This proposal was accepted, and the dictatorship was thus invested with some sort of legal sanction. The war with the Spaniards was, for some time, carried on in a series of small actions, with no decisive advantage to either of the contending parties. In June, 1814, Boves marched with his united forces from Calabozo on La Puerta, where the two dictators, Bolivar and Mariño, had formed a junction, met them, and ordered an immediate attack. After some resistance, Bolivar fled toward Caracas, while Mariño disappeared in the direction of Cumana. Puerto Cabello and Valencia fell into the hands of Boves, who then detached 2 columns (1 of them under the command of Col. Gonzales), by different roads, upon Caracas. Ribas tried in vain to oppose the advance of Gonzales. On the surrender of Caracas to Gonzales, July 17, 1814, Bolivar evacuated La Guayra, ordered the vessels lying in the harbor of that town to sail for Cumana, and retreated with the remainder of his troops upon Barcelona. After a defeat inflicted on the insurgents by Boves, Aug. 8, 1814, at Anguita, Bolivar left his troops the same night secretly to hasten, through by-roads, to Cumana, where, despite the angry protests of Ribas, he at once embarked on board the Bianchi, together with Mariño and some other officers. If Ribas, Paez, and other generals had followed the dictators in their flight, every thing would have been lost. Treated by Gen. Arismendi, on their arrival at Juan Griego, in the island of Margarita, as deserters, and ordered to depart, they sailed for Carupano, whence, meeting with a similar reception on the part of Col. Bermudez, they steered toward Carthagena. There, to palliate their flight, they published a justificatory memoir, in high-sounding phraseology. Having joined a plot for the overthrow of the government of Carthagena, Bolivar had to leave that little republic, and proceeded to Tunja, where the congress of the federalist republic of New Granada was sitting. At that time the province of Cundinamarca stood at the head of the independent provinces which refused to adopt the Granadian federal compact, while Quito, Pasto, Santa Martha, and other provinces, still remained in the power of the Spaniards. Bolivar, who arrived at Tunja Nov. 22, 1814, was created by the congress commander-in-chief of the federalist forces, and received the double mission of forcing the president of the province of Cundinamarca to acknowledge the authority of the congress, and of then marching against Santa Martha, the only fortified seaport the Spaniards still retained in New Granada. The first point was easily carried, Bogota, the capital of the disaffected province, being a defenceless town. In spite of its capitulation, Bolivar allowed it to be sacked during 48 hours by his troops. At Santa Martha, the Spanish general Montalvo, having a feeble garrison of less than 200 men, and a fortress in a miserable state of defence, had already bespoken a French vessel, in order to secure his own flight, while the inhabitants of the town sent word to Bolivar that on his appearance they would open the gates and drive out the garrison. But instead of marching, as he was ordered by the congress, against the Spaniards at Santa Martha, he indulged his rancor against Castillo, the commander of Carthagena, took upon himself to lead his troops against the latter town, which constituted an integral part of the federal republic. Beaten back, he encamped upon La Papa, a large hill, about gun-shot distance from Carthagena, and established a single small cannon as a battery against a place provided with about 80 guns. He afterward converted the siege into a blockade, which lasted till the beginning of May without any other result than that of reducing his army, by desertion and malady, from 2,400 men to about 700. Meanwhile a great Spanish expedition from Cadiz had arrived, March 25, 1815, under Gen. Morillo, at the island of Margarita, and had been able to throw powerful reënforcements into Santa Martha, and soon after to take Carthagena itself. Previously, however, Bolivar had embarked for Jamaica, May 10, 1815, with about a dozen of his officers, on an armed English brig. Having arrived at the place of refuge, he again published a proclamation, representing himself as the victim of some secret enemy or faction, and defending his flight before the approaching Spaniards as a resignation of command out of deference for the public peace. During his 8 months' stay at Kingston, the generals he had left in Venezuela, and Gen. Arismendi in the island of Margarita, stanchly held their ground against the Spanish arms. But Ribas, from whom Bolivar had derived his reputation, having been shot by the Spaniards after the capture of Maturin, there appeared in his stead another man on the stage, of still greater abilities, who, being as a foreigner unable to play an independent part in the South American revolution, finally resolved to act under Bolivar. This was Louis Brion. To bring aid to the revolutionists, he had sailed from London for Carthagena with a corvette of 24 guns, equipped in great part at his own expense, with 14,000 stand of arms and a great quantity of military stores. Arriving too late to be useful in that quarter, he reëmbarked for Cayes, in Hayti, whither many emigrant patriots had repaired after the surrender of Carthagena. Bolivar, meanwhile, had also departed from Kingston to Porte au Prince, where, on his promise of emancipating the slaves, Pétion, the president of Hayti, offered him large supplies for a new expedition against the Spaniards in Venezuela. At Cayes he met Brion and the other emigrants, and in a general meeting proposed himself as the chief of the new expedition, on the condition of uniting the civil and military power in his person until the assembling of a general congress. The majority accepting his terms, the expedition sailed April 16, 1816, with him as its commander and Brion as its admiral. At Margarita the former succeeded in winning over Arismendi, the commander of the island, in which he had reduced the Spaniards to the single spot of Pampatar. On Bolivar's formal promise to convoke a national congress at Venezuela, as soon as he should be master of the country, Arismendi summoned a junta in the cathedral of La Villa del Norte, and publicly proclaimed him the commander-in-chief of the republics of Venezuela and New Granada. On May 31, 1816, Bolivar landed at Carupano, but did not dare prevent Mariño and Piar from separating from him, and carrying on a war against Cumana under their own auspices. Weakened by this separation, he set sail, on Brion's advice, for Ocumare, where he arrived July 3, 1816, with 13 vessels, of which 7 only were armed. His army mustered but 650 men, swelled, by the enrolment of negroes whose emancipation he had proclaimed, to about 800. At Ocumare he again issued a proclamation, promising "to exterminate the tyrants" and to "convoke the people to name their deputies to congress." On his advance in the direction of Valencia he met, not far from Ocumare, the Spanish general Morales at the head of about 200 soldiers and 100 militia men. The skirmishers of Morales having dispersed his advanced guard, he lost, as an eye-witness records, "all presence of mind, spoke not a word, turned his horse quickly round, and fled in full speed toward Ocumare, passed the village at full gallop, arrived at the neighboring bay, jumped from his horse, got into a boat, and embarked on the Diana, ordering the whole squadron to follow him to the little island of Buen Ayre, and leaving all his companions without any means of assistance." On Brion's rebukes and admonitions, he again joined the other commanders on the coast of Cumana, but being harshly received, and threatened by Piar with trial before a court-martial as a deserter and a coward, he quickly retraced his steps to Cayes. After months of exertion, Brion at length succeeded in persuading a majority of the Venezuelan military chiefs, who felt the want of at least a nominal centre, to recall Bolivar as their general-in-chief, upon the express condition that he should assemble a congress, and not meddle with the civil administration. Dec. 31, 1816, he arrived at Barcelona with the arms, munitions of war, and provisions supplied by Pétion. Joined, Jan. 2, 1817, by Arismendi, he proclaimed on the 4th martial law and the union of all powers in his single person; but 5 days later, when Arismendi had fallen into an ambush laid by the Spaniards, the dictator fled to Barcelona. The troops rallied at the latter place, whither Brion sent him also guns and reënforcements, so that he soon mustered a new corps of 1,100 men. April 15, the Spaniards took possession of the town of Barcelona, and the patriot troops retreated toward the charity-house, a building isolated from Barcelona, and intrenched on Bolivar's order, but unfit to shelter a garrison of 1,000 men from a serious attack. He left the post in the night of April 5, informing Col. Freites, to whom he transferred his command, that he was going in search of more troops, and would soon return. Trusting this promise, Freites declined the offer of a capitulation, and, after the assault, was slaughtered with the whole garrison by the Spaniards. Piar, a man of color and native of Curaçoa, conceived and executed the conquest of the provinces of Guiana; Admiral Brion supporting that enterprise with his gun-boats. July 20, the whole of the provinces being evacuated by the Spaniards, Piar, Brion, Zea, Mariño, Arismendi, and others, assembled a provincial congress at Angostura, and put at the head of the executive a triumvirate, of which Brion, hating Piar and deeply interested in Bolivar, in whose success he had embarked his large private fortune, contrived that the latter should be appointed a member, notwithstanding his absence. On these tidings Bolivar left his retreat for Angostura, where, emboldened by Brion, he dissolved the congress and the triumvirate, to replace them by a "supreme council of the nation," with himself as the chief, Brion and Antonio Francisco Zea as the directors, the former of the military, the latter of the political section. However, Piar, the conqueror of Guiana, who once before had threatened to try him before a court-martial as a deserter, was not sparing of his sarcasms against the "Napoleon of the retreat," and Bolivar consequently accepted a plan for getting rid of him. On the false accusation of having conspired against the whites, plotted against Bolivar's life, and aspired to the supreme power, Piar was arraigned before a war council under the presidency of Brion, convicted, condemned to death, and shot, Oct. 16, 1817. His death struck Mariño with terror. Fully aware of his own nothingness when deprived of Piar, he, in a most abject letter, publicly calumniated his murdered friend, deprecated his own attempts at rivalry with the liberator, and threw himself upon Bolivar's inexhaustible fund of magnanimity. The conquest by Piar of Guiana had completely changed the situation in favor of the patriots; that single province affording them more resources than all the other 7 provinces of Venezuela together. A new campaign, announced by Bolivar through a new proclamation, was, therefore, generally expected to result in the final expulsion of the Spaniards. This first bulletin, which described some small Spanish foraging parties withdrawing from Calabozo as "armies flying before our victorious troops," was not calculated to damp these hopes. Against about 4,000 Spaniards, whose junction had not yet been effected by Morillo, he mustered more than 9,000 men, well armed, equipped, and amply furnished with all the necessaries of war. Nevertheless, toward the end of May, 1818, he had lost about a dozen battles and all the provinces lying on the northern side of the Orinoco. Scattering as he did his superior forces, they were always beaten in detail. Leaving the conduct of the war to Paez and his other subordinates, he retired to Angostura. Defection followed upon defection, and every thing seemed to be drifting to utter ruin. At this most critical moment, a new combination of fortunate accidents again changed the face of affairs. At Angostura he met with Santander, a native of New Granada, who begged for the means of invading that territory, where the population were prepared for a general rise against the Spaniards. This request, to some extent, he complied with, while powerful succors in men, vessels, and munitions of war, poured in from England, and English, French, German, and Polish officers, flocked to Angostura. Lastly, Dr. German Roscio, dismayed at the declining fortune of the South American revolution, stepped forward, laid hold of Bolivar's mind, and induced him to convene, Feb. 15, 1819, a national congress, the mere name of which proved powerful enough to create a new army of about 14,000 men, so that Bolivar found himself enabled to resume the offensive. The foreign officers suggested to him the plan of making a display of an intention to attack Caracas, and free Venezuela from the Spanish yoke, and thus inducing Morillo to weaken New Granada and concentrate his forces upon Venezuela, while he (Bolivar) should suddenly turn to the west, unite with Santander's guerillas, and march upon Bogota. To execute this plan, he left Angostura Feb. 24, 1819, after having nominated Zea president of the congress and vice-president of the republic during his absence. By the manœuvres of Paez, Morillo and La Torre were routed at Achaguas, and would have been destroyed if Bolivar had effected a junction between his own troops and those of Paez and Mariño. At all events, the victories of Paez led to the occupation of the province of Barima, which opened to Bolivar the way into New Granada. Every thing being here prepared by Santander, the foreign troops, consisting mainly of Englishmen, decided the fate of New Granada by the successive victories won July 1 and 28, and Aug. 7, in the province of Tunja. Aug. 12, Bolivar made a triumphal entry into Bogota, while the Spaniards, all the Granadian provinces having risen against them, shut themselves up in the fortified town of Mompox. Having regulated the Granadian congress at Bogota, and installed Gen. Santander as commander-in-chief, Bolivar marched toward Pamplona, where he spent about 2 months in festivals and balls. Nov. 3, he arrived at Montecal, in Venezuela, whither he had directed the patriotic chieftains of that territory to assemble with their troops. With a treasury of about $2,000,000, raised from the inhabitants of New Granada by forced contributions, and with a disposable force of about 9,000 men, the 3d part of whom consisted of well disciplined English, Irish, Hanoverians, and other foreigners, he had now to encounter an enemy stripped of all resources and reduced to a nominal force of about 4,500 men, ⅔ of whom were natives, and, therefore, not to be relied upon by the Spaniards. Morillo withdrawing from San Fernando de Apure to San Carlos, Bolivar followed him up to Calabozo, so that the hostile head-quarters were only 2 days' march from each other. If Bolivar had boldly advanced, the Spaniards would have been crushed by his European troops alone, but he preferred protracting the war for 5 years longer. In October, 1819, the congress of Angostura had forced Zea, his nominee, to resign his office, and chosen Arismendi in his place. On receiving this news, Bolivar suddenly marched his foreign legion toward Angostura, surprised Arismendi, who had 600 natives only, exiled him to the island of Margarita, and restored Zea to his dignities. Dr. Roscio, fascinating him with the prospects of centralized power, led him to proclaim the "republic of Colombia," comprising New Granada and Venezuela, to publish a fundamental law for the new state, drawn up by Roscio, and to consent to the establishment of a common congress for both provinces. On Jan. 20, 1820, he had again returned to San Fernando de Apure. His sudden withdrawal of the foreign legion, which was more dreaded by the Spaniards than 10 times the number of Colombians, had given Morillo a new opportunity to collect reënforcements, while the tidings of a formidable expedition to start from Spain under O'Donnell raised the sinking spirits of the Spanish party. Notwithstanding his vastly superior forces, Bolivar contrived to accomplish nothing during the campaign of 1820. Meanwhile the news arrived from Europe that the revolution in the Isla de Leon had put a forcible end to O'Donnell's intended expedition. In New Granada 15 provinces out of 22 had joined the government of Colombia, and the Spaniards now held there only the fortresses of Carthagena and the isthmus of Panama. In Venezuela 6 provinces out of 8 obeyed the laws of Colombia. Such was the state of things when Bolivar allowed himself to be inveigled by Morillo into negotiations resulting, Nov. 25, 1820, in the conclusion at Truxillo of a truce for 6 months. In the truce no mention was made of the republic of Colombia, although the congress had expressly forbidden any treaty to be concluded with the Spanish commander before the acknowledgment on his part of the independence of the republic. Dec. 17, Morillo, anxious to play his part in Spain, embarked at Puerto Cabello, leaving the command-in-chief to Miguel de la Torre, and on March 10, 1821, Bolivar notified La Torre, by letter, that hostilities should recommence at the expiration of 30 days. The Spaniards had taken a strong position at Carabobo, a village situated about half-way between San Carlos and Valencia; but La Torre, instead of uniting there all his forces, had concentrated only his 1st division, 2,500 infantry and about 1,500 cavalry, while Bolivar had about 6,000 infantry, among them the British legion, mustering 1,100 men, and 3,000 llaneros on horseback, under Paez. The enemy's position seemed so formidable to Bolivar, that he proposed to his council of war to make a new armistice, which, however, was rejected by his subalterns. At the head of a column mainly consisting of the British legion, Paez turned through a footpath the right wing of the enemy, after the successful execution of which manœuvre, La Torre was the first of the Spaniards to run away, taking no rest till he reached Puerto Cabello, where he shut himself up with the remainder of his troops. Puerto Cabello itself must have surrendered on a quick advance of the victorious army, but Bolivar lost his time in exhibiting himself at Valencia and Caracas. Sept. 21, 1821, the strong fortress of Carthagena capitulated to Santander. The last feats of arms in Venezuela, the naval action at Maracaibo, in Aug. 1823, and the forced surrender of Puerto Cabello, July, 1824, were both the work of Padilla. The revolution of the Isla de Leon, which prevented O'Donnell's expedition from starting, and the assistance of the British legion, had evidently turned the scale in favor of the Colombians.—The Colombian congress opened its sittings in Jan. 1821, at Cucuta, published, Aug. 30, a new constitution, and after Bolivar had again pretended to resign, renewed his powers. Having signed the new constitution, he obtained leave to undertake the campaign of Quito (1822), to which province the Spaniards had retired after their ejection by a general rising of the people from the isthmus of Panama. This campaign, ending in the incorporation of Quito, Pasto, and Guayaquil into Colombia, was nominally led by Bolivar and Gen. Sucre, but the few successes of the corps were entirely owed to British officers, such as Col. Sands. During the campaigns of 1823–'24, against the Spaniards in upper and lower Peru, he no longer thought it necessary to keep up the appearance of generalship, but leaving the whole military task to Gen. Sucre, limited himself to triumphal entries, manifestos, and the proclamation of constitutions. Through his Colombian body-guard, he swayed the votes of the congress of Lima, which, Feb. 10, 1823, transferred to him the dictatorship, while he secured his reelection as president of Colombia by a new tender of resignation. His position had meanwhile become strengthened, what with the formal recognition of the new state on the part of England, what with Sucre's conquest of the provinces of upper Peru, which the latter united into an independent republic, under the name of Bolivia. Here, where Sucre's bayonets were supreme, Bolivar gave full scope to his propensities for arbitrary power, by introducing the "Bolivian Code," an imitation of the *Code Napoléon*. It was his plan to transplant that code from Bolivia to Peru, and from Peru to Colombia—to keep the former states in check by Colombian troops, and the latter by the foreign legion and Peruvian soldiers. By force, mingled with intrigue, he succeeded indeed, for some weeks at least, in fastening his code upon Peru. The president and liberator of Colombia, the protector and dictator of Peru, and the godfather of Bolivia, he had now reached the climax of his renown. But a serious antagonism had broken out in Colombia, between the centralists or Bolivarists and the federalists, under which latter name the enemies of military anarchy had coalesced with his military rivals. The Colombian congress having, at his instigation, proposed an act of accusation against Paez, the vice-president of Venezuela, the latter broke out into open revolt, secretly sustained and pushed on by Bolivar himself, who wanted insurrections, to furnish him a pretext for overthrowing the constitution and reassuming the dictatorship. Beside his body-guard, he led, on his return from Peru, 1,800 Peruvians, ostensibly against the federalist rebels. At Puerto Cabello, however, where he met Paez, he not only confirmed him in his command of Venezuela, and issued a proclamation of amnesty to all the rebels, but openly took their part and rebuked the friends of the constitution; and by decree at Bogota, Nov. 23, 1826, he assumed dictatorial powers. In the year 1827, from which the decline of his power dates, he contrived to assemble a congress at Panama, with the ostensible object of establishing a new democratic international code. Plenipotentiaries came from Colombia, Brazil, La Plata, Bolivia, Mexico, Guatemala, &c. What he really aimed at was the erection of the whole of South America into one federative republic, with himself as its dictator. While thus giving full scope to his dreams of attaching half a world to his name, his real power was rapidly slipping from his grasp. The Colombian troops in Peru, informed of his making arrangements for the introduction of the Bolivian code, promoted a violent insurrection. The Peruvians elected Gen. Lamar as the president of their republic, assisted the Bolivians in driving out the Colombian troops, and even waged a victorious war against Colombia, which ended in a treaty reducing the latter to its primitive limits, stipulating the equality of the 2 countries, and separating their debts. The congress of Ocaña, convoked by Bolivar, with a view to modify the constitution in favor of his arbitrary power, was opened March 2, 1828, by an elaborate address, insisting on the necessity of new privileges for the executive. When, however, it became evident that the amended project of the constitution would come out of the convention quite different from its original form, his friends vacated their seats, by which proceeding the body was left without a quorum, and thus became extinct. From a country-seat, some miles distant from Ocaña, to which he had retreated, he published another manifesto, pretending to be incensed at the step taken by his own friends, but at the same time attacking the convention, calling on the provinces to recur to extraordinary measures, and declaring that he was ready to submit to any load of power which might be heaped upon him. Under the pressure of his bayonets, popular assemblies at Caracas, Carthagena, and Bogota, to which latter place he had repaired, anew invested him with dictatorial power. An attempt to assassinate him in his sleeping room at Bogota, which he escaped only by leaping in the dark from the balcony of the window, and lying concealed under a bridge, allowed him for some time to introduce a sort of military terrorism. He did not, however, lay hands on Santander, although he had participated in the conspiracy, while he put to death Gen. Padilla, whose guilt was not proved at all, but who, as a man of color, was not able to resist. Violent factions disturbing the republic in 1829, in a new appeal to the citizens, Bolivar invited them to frankly express their wishes as to the modifications to be introduced into the constitution. An assembly of notables at Caracas answered by denouncing his ambition, laying bare the weakness of his administration, declaring the separation of Venezuela from Colombia, and placing Paez at the head of that republic. The senate of Colombia stood by Bolivar, but other insurrections broke out at different points. Having resigned for the 5th time, in Jan. 1830, he again accepted the presidency, and left Bogota to wage war on Paez in the name of the Colombian congress. Toward the end of March, 1830, he advanced at the head of 8,000 men, took Caracuta, which had revolted, and then turned upon the province of Maracaibo, where Paez awaited him with 12,000 men, in a strong position. As soon as he became aware that Paez meant serious fighting, his courage collapsed. For a moment he even thought to subject himself to Paez, and declare against the congress; but the influence of his partisans at the congress vanished, and he was forced to tender his resignation, notice being given to him that he must now stand by it, and that an annual pension would be granted to him on the condition of his departure for foreign countries. He accordingly sent his resignation to the congress, April 27, 1830. But hoping to regain power by the influence of his partisans, and a reaction setting in against Joachim Mosquera, the new president of Colombia, he effected his retreat from Bogota in a very slow manner, and contrived, under a variety of pretexts, to prolong his sojourn at San Pedro, until the end of 1830, when he suddenly died. The following is the portrait given of him by Ducoudrey-Holstein: "Simon Bolivar is 5 feet 4 inches in height, his visage is long, his cheeks hollow, his complexion livid brown; his eyes are of a middle size, and sunk deep in his head, which is covered thinly with hair. His mustaches give him a dark and wild aspect, particularly when he is in a passion. His whole body is thin and meagre. He has the appearance of a man 65 years old. In walking, his arms are in continual motion. He cannot walk long, but becomes soon fatigued. He likes his hammock, where he sits or lolls. He gives way to sudden gusts of resentment, and becomes in a moment a madman, throws himself into his hammock, and utters curses and imprecations upon all around him. He likes to indulge in sarcasms upon absent persons, reads only light French literature, is a bold rider, and passionately fond of waltzing. He is fond of hearing himself talk and giving toasts. In adversity, and destitute of aid from without, he is perfectly free from passion and violence of temper. He then becomes mild, patient, docile, and even submissive. In a great measure he conceals his faults under the politeness of a man educated in the so-called *beau monde*, possesses an almost Asiatic talent for dissimulation, and understands mankind better than the mass of his countrymen." By decree of the congress of New Granada, his remains were removed in 1842 to Caracas, and a monument erected there in his honor.—See *Histoire de Bolivar, par Gén. Ducoudrey-Holstein, continuée jusqu'à sa mort,* *par Alphonse Viollet* (Paris, 1831), "Memoirs of Gen. John Miller (in the service of the Republic of Peru)," Col. Hippisley's "Account of his Journey to the Orinoco" (Lond. 1819).

Bomarsund

BOMARSUND, a narrow channel between the island of Alands and Vardo, at the entrance of the gulf of Bothnia. The Russian fortifications to the harbor of Bomarsund were destroyed by the British and French fleets during the war of 1854. The channels leading up to Bomarsund were blockaded at the end of July by 4 British ships and a few small steamers. Shortly afterward strong detachments of the allied fleets arrived, with the admirals Napier and Parseval-Deschênes, followed, Aug. 7, by the line-of-battle ships with Gen. Baraguay d'Hilliers and 12,000 troops, mostly French. The Russian commander, Gen. Bodisco, was compelled to surrender on Aug. 16, the allies continuing to occupy the island until the end of the month, when the whole of the fortification was blown up. The trophies of the victors were 112 mounted guns, 79 not mounted, 3 mortars, 7 field guns, and 2,235 prisoners. The principal military interest offered by this siege is its setting completely at rest the question as to the employment of uncovered masonry in fortifications with land-fronts.

Bomb

BOMB, or SHELL, a hollow iron shot for heavy guns and mortars, filled with powder, and thrown at a considerable elevation, and intended to act by the force of its fall and explosion. They are generally the largest of all projectiles used, as a mortar, being shorter than any other class of ordnance, can be made so much larger in diameter and bore. Bombs of 10, 11, and 13 inches are now of common use; the French, at the siege of Antwerp in 1831, used a mortar and shells cast in Belgium, of 24 inches calibre. The powder contained in a bomb is exploded by a fuze or hollow tube filled with a slow-burning composition, which takes fire by the discharge of the mortar. These fuzes are so timed that the bomb bursts as short a time as possible after it has reached its destination, sometimes just before it reaches the ground. Beside the powder, there are sometimes a few pieces of Valenciennes composition put into the shell, to set fire to combustible objects, but it is maintained that these pieces are useless, the explosion shattering them to atoms, and that the incendiary effects of shells without such composition are equally great. Bombs are thrown at angles varying from 15° to 45°, but generally from 30° to 45°; the larger shells and smaller charges having the greatest proportional ranges at about 45°, while smaller shells with greater charges range furthest at about 30°. The charges are in all instances proportionally small: a 13-inch bomb weighing 200 lbs., thrown out of a mortar at the elevation of 45°, with a charge of 3¼ lbs. powder, ranges 1,000 yards, and with 20 lbs. or $\frac{1}{10}$ of its weight, 4,200 yards. The effects of such a bomb, coming down from a tremendous height, are very great if it falls on any thing destructible. It will go through all the floors in a house, and penetrate vaulted arches of considerable strength; and, though a 13-inch shell only contains about 7 lbs. of powder, yet its bursting acts like the explosion of a mine, and the fragments will fly to a distance of 800 or 1,000 yards if unobstructed. On the contrary, if it falls on soft soil, it will imbed itself in the earth to a depth of from 8 to 12 feet, and either be extinguished or explode without doing any harm. Bombs are therefore often used as small mines, or *fougasses*, being imbedded in the earth about a foot deep in such places where the enemy must pass; to fire them, a slow match or train is prepared. This is the first shape in which they occur in history: the Chinese, according to their chronicles, several centuries before our era used metal balls filled with bursting composition and small pieces of metal, and fired by a slow match. They were employed in the defence of defiles, being deposited there on the approach of the enemy. In 1232, at the siege of Kai-fong-fu, the Chinese used, against an assault, to roll bombs down the parapet among the assailant Mongols. Mahmood Shah of Guzerat, in the siege of Champaneer, in 1484, threw bombs into the town. In Europe, not to mention earlier instances of a more doubtful character, the Arabs in Spain, and the Spaniards after them, threw shells and carcasses from ordnance after the beginning of the 14th century, but the costliness and difficulties of manufacturing hollow shot long prevented their general introduction. They have become an important ingredient of siege artillery since the middle of the 17th century only.

Bomb Ketch

BOMB KETCH is now generally used to designate the more old-fashioned sort of mortar vessels (*galiotes à bombes*). They were built strong enough to resist the shock caused by the recoil of the mortar, 60 to 70 feet long, 100 to 150 tons burden; they drew from 8 to 9 feet water, and were rigged usually with 2 masts. They used to carry 2 mortars and some guns. The sailing qualities of these vessels were naturally very inferior. A tender, generally a brig, was attached to them, which carried the artillerymen and the greater part of the ammunition, until the action commenced.

Bomb-proof

BOMB-PROOF, the state of a roof strong enough to resist the shock of bombs falling upon it. With the enormous calibres now in use, it is almost impossible, and certainly as yet not worth while, to aim at absolute security from vertical fire for most buildings covered in bomb-proof. A circular vault 3½ feet thick at the keystone, will resist most shells, and even a single 13-inch shell might not break through; but a second one could in most cases do so. Absolutely bomb-proof buildings are therefore confined to powder magazines, laboratories, &c., where a single shell would cause an immense explosion. Strong vaults covered over with 3 or 4 feet of earth, will give the greatest security. For common casemates the vaults need not be so very strong, as the chance of shells falling repeatedly into the same place is very remote. For temporary shelter against shells, buildings are covered in with strong balks laid close together and overlaid with fascines, on which some dung and finally earth is spread. The introduction of casemated batteries and forts, and of casemated defensive barracks, placed mostly along the inner slope of the rampart, at a short distance from it, has considerably increased the number of bomb-proof buildings in fortresses; and with the present mode of combining violent bombardments, continued night and day, with the regular attack of a fortress, the garrison cannot be expected to hold out unless effective shelter is provided in which those off duty can recover their strength by rest. This sort of buildings is therefore likely to be still more extensively applied in the construction of modern fortresses.

Bomb Vessel

BOMB VESSEL, or MORTAR BOAT, is the expression in use for the more modern class of ships constructed to carry mortars. Up to the Russian war, those built for the British service drew 8 or 9 feet water, and carried, beside their 2 10-inch mortars, 4 68-pounders, and 6 18 lb. carronades. When the Russian war made naval warfare in shallow waters and intricate channels a necessity, and mortar boats were required on account of the strong sea-fronts of the Russian fortresses, which defied any direct attack by ships, a new class of bomb vessels had to be devised. The new boats thus built are about 60 feet long, with great breadth of beam, round bows like a Dutch galliot, flat bottoms, drawing 6 or 7 feet water, and propelled by steam. They carry 2 mortars, 10 or 13-inch calibre, and a few field-guns or carronades to repel boarding parties by grape, but no heavy guns. They were used with great effect at Sweaborg, which place they bombarded from a distance of 4,000 yards.

Bombardier

BOMBARDIER, originally the man having charge of a mortar in a mortar battery, but now retained in some armies to designate a non-commissioned rank in the artillery, somewhat below a sergeant. The bombardier generally has the pointing of the gun for his principal duty. In Austria, a bombardier corps is formed as a training school for non-commissioned officers of the artillery, an institution which has contributed much to the effective and scientific mode of serving their guns, for which that branch of the Austrian service is distinguished.

Bombardment

BOMBARDMENT, the act of throwing bombs or shells into a town or fortress for incendiary purposes. A bombardment is either desultory, when ships, field batteries, or a proportionally small number of siege batteries, throw shells into a place in order to intimidate the inhabitants and garrison into a hasty surrender, or for some other purpose; or it is regular, and then forms one of the methods of conducting the attack of a fortified place. The attack by regular bombardment was first introduced by the Prussians in their sieges in 1815, after

Waterloo, of the fortresses in the north of France. The army and the Bonapartist party being then much dispirited, and the remainder of the inhabitants anxiously wishing for peace, it was thought that the formalities of the old methodical attack in this case might be dispensed with, and a short and heavy bombardment substituted, which would create fires and explosions of magazines, prevent every soul in the place from getting a night's rest, and thus in a short time compel a surrender, either by the moral pressure of the inhabitants on the commander, or by the actual amount of devastation caused, and by out-fatiguing the garrison. The regular attack by direct fire against the defences, though proceeded with, became secondary to vertical fire and shelling from heavy howitzers. In some cases a desultory bombardment was sufficient, in others a regular bombardment had to be resorted to; but in every instance the plan was successful; and it is now a maxim in the theory of sieges, that to destroy the resources, and to render unsafe the interior of a fortress by vertical fire, is as important (if not more so) as the destruction of its outer defences by direct and ricochet firing. A bombardment will be most effective against a fortress of middling size, with numerous non-military inhabitants, the moral effect upon them being one of the means applied to force the commander into surrender. For the bombardment of a large fortress, an immense *matériel* is required. The best example of this is the siege of Sebastopol, in which quantities of shells formerly unheard of were used. The same war furnishes the most important example of a desultory bombardment, in the attack upon Sweaborg by the Anglo-French mortar boats, in which above 5,000 shells and the same number of solid shot were thrown into the place.

Bonnet

BONNET, in fortification, a transverse elevation of the parapet, or traverse and parapet, used either to prevent the enemy from seeing the interior of a work from some elevated point, or, in barbette batteries, to protect men and guns from flanking fire. In these latter batteries, the guns firing over the crest of the parapet have to be placed on high traversing platforms, on which the gun-carriage rests, recoils, and is run forward. The men are, therefore, partly exposed to the fire of the enemy while they serve the gun; and flanking or ricocheting fire is especially dangerous, the object to be hit being nearly twice as high as in batteries with embrasures and low gun-carriages. To prevent this, traverses or cross parapets are placed between the guns, and have to be constructed so much higher than the parapet, that they fully cover the gunners while mounted on the platform. This superstructure is continued from the traverse across the whole thickness of the parapet. It confines the sweep of the guns to an angle of from 90° to 120°, if a gun has a bonnet on either side.—BONNET-À-PRÊTRE, or QUEUE D'HIRONDELLE (swallow tail), in field fortification, is an intrenchment having 2 salient angles, and a reëntering angle between them. The latter is always 90°, the 2 salient angles mostly 60°, so that the 2 outer faces, which are longer than the inner ones, diverge to the rear. This work is sometimes used for small bridge heads, or in other situations where the entrance to a defile has to be defended.

Borodino

BORODINO, a village on the left bank of the river Kolotcha, in Russia, about 2 miles above its junction with the Moskva. From this village the Russians name the great battle, in 1812, which decided the possession of Moscow; the French call it the battle of the Moskva, or of Mozhaisk. The battle-field is on the right bank of the Kolotcha. The Russian right wing was covered by that river from its junction with the Moskva to Borodino; the left wing was drawn back, *en potence*, behind a brook and ravine descending from the extreme left, at Utitsa, toward Borodino. Behind this ravine, 2 hills were crowned with incomplete redoubts, or lunettes, that nearest the centre called the Rayevski redoubt, those on the hill toward the left, 3 in number, called the Bagration lunettes. Between these 2 hills, another ravine, called from a village behind it that of Semionovskoye, ran down from the Russian left toward the former ravine, joining it about 1,000 yards before it reached the Kolotcha. The main road to Moscow runs by Borodino; the old road by Utitsa, to Mozhaisk, in rear of the Russian position. This line, about 9,000 yards in extent, was held by about 130,000 Russians, Borodino being occupied in front of the centre. Gen. Kutusoff was the Russian commander-in-chief; his troops were divided into 2 armies, the larger, under Barclay de Tolly, holding the right and centre, the smaller, under Bagration, occupying the left. The position was very badly chosen; an attack on the left, if successful, turned the right and centre completely;

and if Mozhaisk had been reached by the French before the Russian right had retreated, which was possible enough, they would have been hopelessly lost. But Kutusoff, having once rejected the capital position of Tsarevoye Zaimishtche, selected by Barclay, had no other choice. The French, led by Napoleon in person, were about 125.000 strong: after driving the Russians, Sept. 5, 1812, from some slight intrenchments on their left, they were arranged for battle on the 7th, N. S. (Aug. 26, O. S.). Napoleon's plan was based upon the errors of Kutusoff; merely observing the Russian centre, he concentrated his forces against their left, which he intended to force, and then cut his way through toward Mozhaisk. Prince Eugene was accordingly ordered to make a false attack upon Borodino, after which Ney and Davoust were to assail Bagration and the lunettes named from him, while Poniatowski was to turn the extreme left of the Russians by Utitsa; the battle once well engaged, Prince Eugene was to pass the Kologa, and attack the Rayevski lunette. Thus the whole front actually attacked did not exceed in length 5,000 yards, which allowed 26 men to each yard of front, an unprecedented depth of order of battle, which accounts for the terrible losses of the Russians by artillery fire. About daybreak Poniatowski advanced against Utitsa, and took it, but his opponent, Tutchkoff, again expelled him; subsequently, Tutchkoff having had to send a division to the support of Bagration, the Poles retook the village. At 6 o'clock Davoust attacked the proper left of the Bagration intrenchments. Under a heavy fire from 12-pounders, to which he could oppose only 3 and 4-pounders, he advanced. Half an hour later, Ney attacked the proper right of these lunettes. They were taken and retaken, and a hot and undecided fight followed.—Bagration, however, well observed the great force brought against him, with their powerful reserves, and the French guard in the background. There could be no mistake about the real point of attack. He accordingly called together what troops he could, sending for a division of Rayevski's corps, for another of Tutchkoff's corps, for guards and grenadiers from the army reserve, and requesting Barclay to despatch the whole corps of Baggehufvud. These reënforcements, amounting to more than 30,000 men, were sent at once; from the army reserve alone, he received 17 battalions of guards and grenadiers, and 2 12-pound batteries. They could not, however, be made available on the spot before 10 o'clock, and before this hour Davoust and Ney made their second attack against the intrenchments, and took them, driving the Russians over the Semionovskoye ravine. Bagration sent his cuirassiers forward; an irregular struggle of great violence followed, the Russians regaining ground as their reënforcements arrived, but again driven beyond the ravine as soon as Davoust engaged his reserve division. The losses on both sides were immense; almost all the general officers were killed or wounded, and Bagration himself was mortally hit. Kutusoff now at last took some part in the battle, sending Dokhturoff to take the command of the left, and his own chief of the staff, Toll, to superintend the arrangements for defence on the spot. A little after 10 the 17 battalions of guards and grenadiers, and the division of Vasiltchikoff, arrived at Semionovskoye; the corps of Baggehufvud was divided, one division being sent to Rayevski, another to Tutchkoff, and the cavalry to the right. The French, in the mean time, continued their attacks; the Westphalian division advanced in the wood toward the head of the ravine, while Gen. Friant passed this ravine, without, however, being able to establish himself there. The Russians now were reënforced (½ past 10) by the cuirassiers of Borosdin from the army reserve, and a portion of Korff's cavalry; but they were too much shattered to proceed to an attack, and about the same time the French were preparing a vast cavalry charge. On the Russian centre Eugene Beauharnais had taken Borodino at 6 in the morning, and passed over the Kologa, driving back the enemy; but he soon returned, and again crossed the river higher up in order to proceed, with the Italian guards, the division of Broussier (Italians), Gerard, Morand, and Grouchy's cavalry, to the attack on Rayevski, and the redoubt bearing his name. Borodino remained occupied. The passage of Beauharnais's troops caused delay; his attack could not begin much before 10 o'clock. The Rayevski redoubt was occupied by the division Paskiewitch, supported on its left by Vasiltchikoff, and having Dokhturoff's corps for a reserve. By 11 o'clock, the redoubt was taken by the French, and the Paskiewitch division completely scattered, and driven from the field of battle. But Vasiltchikoff and Dokhturoff retook the redoubt; the division of Prince Eugene of Würtemberg arrived in time, and now Barclay ordered the corps of Ostermann to take position to the rear as a fresh reserve. With this corps the last intact body of Russian infantry was brought within range; there remained now, as a reserve, only 6 battalions of the guard. Eugene Beauharnais, about 12 o'clock, was just going to attack the Rayevski redoubt a second time, when Russian cavalry appeared on the left bank of the Kologa. The attack was suspended, and troops were sent to meet them. But the Russians could neither take Borodino, nor pass the marshy bottom of the Voina ravine, and had to retreat by Zodock, without any other result than having to some extent crossed Napoleon's intentions.—In the mean time, Ney and Davoust, posted on the Bagration hill, had maintained a hot fire across the Semionovskoye ravine on the Russian masses. All at once the French cavalry began to move. To the right of Semionovskoye, Nansouty charged the Russian infantry with complete success, until Sievas's cavalry took him in flank and drove him back. To the left, Latour-Maubourg's 3,000 horse advanced in 2 columns; the first, headed by 2 regiments of Saxon cuirassiers, rode twice over 3 Russian grenadier battalions just forming square, but they were also taken in flank by Russian cavalry; a Polish cuirassier regiment completed the destruction of the Russian grenadiers, but they too were driven back to the ravine, where the second column, 2 regiments of Westphalian cuirassiers, and 1 of Polish lancers, repelled the Russians. The ground thus being secured, the infantry of Ney and Davoust passed the ravine. Friant occupied Semionovskoye, and the remainder of the Russians who had fought here, grenadiers, guards, and line, were finally driven back and their defeat completed by the French cavalry. They fled in small disorderly bands toward Mozhaisk, and could only be collected late at night; the 3 regiments of guards alone preserved a little order. Thus the French right, after defeating the Russian left, occupied a position directly in rear of the Russian centre as early as 12 o'clock, and then it was that Davoust and Ney implored Napoleon to act up to his own system of tactics, and complete the victory, by launching the guards by Semionovskoye on the Russian rear. Napoleon, however, refused, and Ney and Davoust, themselves dreadfully shattered, did not venture to advance without reënforcements.—On the Russian side, after Eugene Beauharnais had desisted from the attack on the Rayevski redoubt, Eugene of Würtemberg was sent to Semionovskoye, and Ostermann, too, had to change front in that direction so as to cover the rear of the Rayevski hill toward Semionovskoye. When Sorbier, the French chief of artillery, saw these fresh troops, he sent for 36 12-pounders from the artillery of the guard, and formed a battery of 85 guns in front of Semionovskoye. While these guns battered the Russian masses, Murat drew forward the hitherto intact cavalry of Montbrun and the Polish lancers. They surprised Ostermann's troops in the act of deploying, and brought them into great danger, until the cavalry of Kreutz repelled the French horse. The Russian infantry continued to suffer from the artillery fire; but neither party ventured to advance. It was now about 2 o'clock, and Eugene Beauharnais, reassured as to the hostile cavalry on his left, again attacked the Rayevski redoubt. While the infantry attacked it in front, cavalry was sent from Semionovskoye to its rear. After a hard struggle, it remained in the hands of the French; and a little before 3 o'clock the Russians retreated. A general cannonade from both sides followed, but the active fighting was over. Napoleon still refused to launch his guard, and the Russians were allowed to retreat as they liked. The Russians had all their troops engaged, excepting the 2 first regiments of the guards, and even these lost by artillery fire 17 officers and 600 men. Their total loss was 52,000 men, beside slightly wounded and scattered men who soon found their way back; but on the day after the battle their army counted only 52,000 men. The French had all their troops engaged, with the exception of the guards (14,000 infantry, 5,000 cavalry and artillery); they thus beat a decidedly superior number. They were, beside, inferior in artillery, having mostly 3 and 4-pounders, while ¼ of the Russian guns were 12-pounders, and the rest 6-pounders. The French loss was 30,000 men; they took 40 guns, and only about 1,000 prisoners. If Napoleon had launched his guard, the destruction of the Russian army, according to Gen. Toll, would have been certain. He did not, however, risk this last reserve, the nucleus and mainstay of his army, and thus, perhaps, missed the chance of having peace concluded in Moscow.—The above account, in such of its details as are at variance with those commonly received, is mainly based upon the "Memoirs of Gen. Toll," whom we have mentioned as Kutusoff's chief of the staff. This book contains the best Russian account of the battle, and is indispensable for its correct appreciation.

Bosquet

BOSQUET, Marie Joseph, a marshal of France, born in 1810, at Pau, in the department of Basses Pyrénées. He entered the polytechnic school of Paris in 1829, the military school at Metz in 1831, became lieutenant of artillery in 1833, and in that capacity went to Algeria with the 10th regiment of artillery, in 1834. There on one occasion, when a small French detachment found itself in a very critical position, the commanding officer being at a loss how to disengage his troops, young Bosquet stepped forward and proposed a plan which led to the total discomfiture of the enemy. He was appointed lieutenant in 1836, captain in 1839, major in 1842, lieut.-colonel in 1845, colonel, and soon after, under the auspices of the republican government, general of brigade, in 1848. During the campaign of Kabylia in 1851, he was wounded, at the head of his brigade, while storming the defile of Monagal. His promotion to the rank of general of division was put off in consequence of his reserve toward Louis Napoleon, but when troops were sent to the war in Turkey he obtained the command of the second division. At the battle of the Alma he executed the flanking attack of the French right wing upon the Russian left, with a speed and energy praised by the Russians themselves, and even succeeded in bringing his artillery through pathless and apparently impracticable ravines up to the plateau. It must, however, be added that on this occasion his own numerical force greatly surpassed that of the enemy. At Balaklava he hastened to disengage the English right wing, so that the remainder of the English light cavalry was enabled to retreat under the cover of his troops, while the Russians were compelled to stop their pursuit. At Inkerman he was ready early in the morning to support the English with 3 battalions and 2 batteries. This offer being declined, he posted as reserves, in the rear of the English right wing, 3 French brigades, with 2 of which, at 11 o'clock, he advanced to the line of battle, thus forcing the Russians to fall back. But for this succor, the English would have been completely destroyed, since they had all their troops engaged and no more reserves to draw upon, while the Russians had 16 battalions not yet touched. As chief of the corps destined to cover the allied forces on the slope of the Tchernaya, Bosquet constantly distinguished himself by quickness, vigilance, and activity. He took part in the storming of the Malakoff, and after that event was made a marshal, and in 1856 a senator.

Bourrienne

BOURRIENNE, Louis Antoine Fauvelet de, private secretary of Napoleon, born at Sens, July 9, 1769, died near Caen, Feb 7, 1834. He entered the military school of Brienne in 1778, and was there some 6 years as Napoleon's school-fellow. From 1789 to 1792, he spent his time as attaché to the French embassy at Vienna, as a student of international law and northern languages at Leipsic, and at the court of Poniatowski, at Warsaw. After his return to Paris, he renewed his intimacy with Napoleon, then a poor and friendless officer; but the decisive turn taken by the revolutionary movement after June 20, 1792, drove him back to Germany. In 1795 he again returned to Paris, and there again met Napoleon, who however treated him coldly; but toward the end of 1796, he applied again to him, and was summoned to headquarters, and installed at once as his private secretary. After the second Italian campaign, Bourrienne received the title of councillor of state, was lodged at the Tuilleries, and admitted to the first consul's family circle. In 1802 the house of Coulon, army contractors, whose partner Bourrienne had secretly become, and for which he had procured the lucrative business of supplying the whole cavalry equipment, failed with a deficit of 3 millions; the chief of the house disappeared, and Bourrienne was banished to Hamburg. In 1805 he was appointed to oversee at Hamburg the strict execution of Napoleon's continental system. Accusations of peculation rising against him from the Hamburg senate, from which he had obtained 2,000,000 francs, and from the emperor Alexander, whose relative, the duke of Mecklenburg, he had also mulcted, Napoleon sent a commission to inquire into his conduct, and ordered him to refund 1,000,000 francs to the imperial treasury. Thus, a disgraced and ruined man, he lived at Paris until Napoleon's downfall, in 1814, when he stepped forward, had his million paid back by the French provisional government, was installed its postmaster-general, deposed from this post by Louis XVIII., and at the first rumor of Napoleon's return from Elba, made, by the same prince, prefect of the Paris police, a post he held for 8 days. As Napoleon, in his decree dated Lyons, March 13, had exempted him from the general amnesty, he followed Louis XVIII. to Belgium, was thence despatched to Hamburg, and created, on his return to Paris, state councillor, subsequently minister of state. His pecuniary embarrassments forced him in 1828 to seek a refuge in Belgium, on an estate of the duchess of Brancas at Fontaine l'Evêque, not far from Charleroy. Here, with the assistance of M. de Villemarest and others, he drew up his "Memoirs," (10 vols. 8vo), which appeared in 1829, at Paris, and caused a great deal of excitement. He died in a lunatic hospital.

Brescia

BRESCIA, a province of Lombardy, bounded N. by Bergamo and Tyrol, W. by Verona and Mantua, S. by Cremona, E. by Lodi and Bergamo. Area, 1,300 sq. m.; pop. 350,000. The fertility of the soil is favorable to the choicest productions, and one of the most important branches of industry is the trade in silk, of which 1,000,000 pounds are annually produced; the number of silk manufactories is 27, and of silk weaving establishments 1,046. About 70,000 lbs. of very superior wool are raised annually, and there are not less than 45 woollen manufactories, 40 manufactories of woollen and cotton goods, 13 of cloth, 27 of gold, silver, and bronze, 12 of hardware and porcelain, 7 printing establishments, 137 manufactories of iron and other metals (Brescia steel enjoying a world-wide reputation), and 77 of fire-arms and weapons, the excellency of which gave to Brescia, in former times, the name of *l'Armata*. Butter, cheese, wheat, maize, hay, flax, chestnuts, oil, and wine, afford additional elements of prosperity. The trade of the province is principally carried on in the capital of the same name.—The town (anc. *Brixia*) has a population of 40,000, and is situated on the rivers Mella and Garza, at the foot of a hill. The strong castle on the top of the hill was in former times called the falcon of Lombardy. It is a well-built, pleasant, and animated town, noted for its abundant supply of fountains, of which there are not less than 72 in the streets and squares, beside some 100 in private houses. The ancient cathedral, and the other churches, contain many paintings of the great Italian masters. The new cathedral, or *Duomo Nuovo*, was begun in 1604, but the vaulting of the cupola was only completed in 1825. The chief ornament of the church of Santa Afra is "The Woman taken in Adultery," by Titian. There are, on the whole, over 20 churches, all noted for their treasures of art. Among the remarkable public buildings, is the *Palazzo della Loggia* in the *Piazza Vecchia*, intended for the town hall, the beautiful façade of which suffered much from the bombardment in April, 1849. The Palazzo Tosi was presented to the town by Count Tosi, and contains, among many famous pictures, the celebrated "Saviour," by Raphael. The picture galleries in the Palazzo Averoldi, Fenaroli, Lecchi, Martinengo, and in other palaces, are equally noted for their artistic attractions. A whole street, *Il Corso del Teatro*, has the fronts of the 2d stories decorated with scriptural, mythological, and historical paintings. The *Biblioteca Quirinina*, founded in the middle of the 18th century by Cardinal Quirini, contains upward of 80,000 volumes, beside a vast collection of curious manuscripts and objects of antiquity. The most unique monument of Brescia is the cemetery (*Campo Santo*), the finest in Italy, built in 1810, consisting of a semi-circular area in front, surrounded by tombs, and a row of cypresses. Brescia is the seat of the provincial government, of a bishopric, of a tribunal of commerce, and of other courts of law. There are various charitable institutions, a theological seminary, 2 gymnasiums, a lyceum, a botanical garden, a cabinet of antiquities and one of natural history, an agricultural society, several academies, the philharmonic being one of the oldest in Italy, a casino, a fine theatre, and a large booth outside of the town for the annual fair—a period of great activity and rejoicing. The weekly journal of Brescia is called *Giornale della provincia Bresciana*. A Roman temple of marble was excavated in the vicinity in 1822. Brescia is connected by railway with Verona, and other Italian cities. The town is supposed to have been founded by the Etruscans. After the fall of the Roman empire it was pillaged by the Goths, and eventually passed into the hands of the Franks. Otho the Great raised it to the rank of a free imperial city, but the contests between the Guelphs and the Ghibellines became a source of trouble to the town. Having been for some time under the sway of the lords of Verona, it fell in 1378 into the power of the Milanese. In 1426 it was taken by Carmagnola; in 1438 besieged by Picinino; in 1509 it surrendered to the French; in 1512 it was captured by the Venetian general Gritti, but eventually liberated by Gaston de Foix. Subjected to 3 more sieges during the 16th century, it remained in the possession of Venice until the fall of that republic. During the Napoleonic era it was the capital of the department of Mella. In the revolution of 1849, the Brescians rose in arms against the power of Austria, to which they had been subjected since 1814. The town was bombarded, March 30, by General Haynau, and held out until the noon of April 2, when it was compelled to surrender, and to pay a ransom of $1,200,000, in order to avert utter destruction.

Bridge

BRIDGE, MILITARY. The art of constructing temporary bridges for the passage, by troops, of large rivers and narrow arms of the sea, was well known to the ancients, whose works in this respect are sometimes of surprising magnitude. Darius passed the Bosporus and Danube, and Xerxes the Hellespont, by bridges of boats, the description of which we find in Herodotus. The army of Xerxes constructed 2 bridges across the Dardanelles, the first of 360 vessels, anchored head and stern alongside each other, their keels in the direction of the current, the vessels connected with each other by strong cables, over which planks were laid, fastened by a rail on either side, and covered in by a bed of earth. The 2d bridge had 314 vessels, and was similarly constructed. According to Arrian, Alexander had a regular pontoon-train of light boats attached to his army. The Romans had wicker-work vessels, covered with the skins of animals, destined to support the timber platform of a bridge; these formed a part of the train of their armies until the end of the empire. They, however, also knew how to construct a more solid kind of military bridge, whenever a rapid river had to be crossed; witness the famous bridges on piles, on which Cæsar passed the Rhine.—During the middle ages we find no notice of bridge equipages, but during the 30 years' war the various armies engaged carried materials with them to form bridges across the large rivers of Germany. The boats used were very heavy, and generally made of oak. The platform of the bridge was laid on trestles standing in the bottoms of these boats. The Dutch first adopted a smaller kind of vessel, flat-bottomed, with nearly vertical sides, pointed head and stern, and both ends projecting, in an inclined plane, above the surface of the water. They consisted of a framework of wood, covered with sheets of tin, and were called pontoons. The French, too, according to Folard, claim the invention of pontoons made of copper, and are said to have had, about 1672, a complete pontoon train. By the beginning of the 18th century all European armies had provided themselves with this kind of vessels, mostly wooden frames, covered in with tin, copper, leather, or tarred canvas. The latter material was used by the Russians. The boats were small, and had to be placed close together, with not more than 4 or 5 feet clear space between them, if the bridge was to have any buoyancy; the current of the water was thereby greatly obstructed, the safety of the bridge endangered, and a chance given to the enemy to destroy it by sending floating bodies against it.—The pontoons now employed by the continental armies of Europe are of a larger kind, but similar in principle to those 100 years ago. The French have used, since 1829, a flat-bottomed vessel with nearly vertical sides, diminishing in breadth toward the stem, and also, but a little less, toward the stern; the 2 ends rise above the gunwales and are curved like those of a canoe. The dimensions are: length, 31 ft.; breadth, at top, 5 ft. 7 in.; at bottom, 4 ft. 4 in. The framework is of oak, covered with fir planking. Every pontoon weighs 1,658 lbs. and has a buoyancy (weight of cargo which would sink the vessel to the top of the gunwales) of 18,675 lbs. When formed into a bridge, they are placed at intervals of 14 ft. clear space from gunwale to gunwale, and the road of the bridge is 11 ft. wide. For the advanced guard of an army a smaller kind of pontoon is used, for bridging over rivers of less importance. The Austrian pontoons are similar to the larger French pontoon, but divided transversely in the middle, for more convenient carriage, and put together in the water. Two vessels placed close alongside each other, and connected by short timbers, a longitudinal timber supporting the balks of the platform, constitute a floating pier of a bridge. These pontoons, invented by Birago, were introduced in 1823. The Russians have a framework of wood for their pontoons, so constructed that the centre pieces, or thwarts, may be unshipped; over this frame is stretched sail-cloth, covered with tar or a solution of India rubber. They are in length, 21 ft. 9 in.; breadth, 4 ft. 11 in.; depth, 2 ft. 4 in., and weigh 718 lbs. each. Breadth of road of bridge, 10 ft.; distance from pontoon to pontoon, 8 ft. The Russians also have pontoons with a similar framework, covered over with leather. The Prussians are said to have been the first to divide their pontoons transversely into compartments, so as to prevent one leak from sinking them. Their pontoons are of wood and flat-bottomed. The span or clear distance between the pontoons, in their bridges, varies from 8 to 16 ft., according to circumstances. The Dutch, since 1832, and the Piedmontese, have pontoon trains similar to those in the Austrian service. The Belgian pontoon has a pointed head, but is not contracted at the stern. In all continental armies small boats to carry out the anchors accompany the pontoon train.—The British and the U. S. armies have entirely abandoned the use of boats for the formation of their pontoon trains, and adopted hollow cylinders of light material, closed on all sides, to support their bridges. In England the cylindrical pontoons, with conical, hemispherical or paraboloidal ends, as constructed in 1828 by Col. Blanchard, were adopted in 1836 to the exclusion of all other kinds. The larger British pontoon is 24½ ft. long and 2 ft. 8 in. in diameter. It is formed of sheet tin, framed round a series of wheels constructed of tin, having hollow cylinders of tin for their spokes; a larger tin cylinder, 1¼ in. in diameter, forms their common axis, and runs through the entire length of the pontoon.—Experiments have been made in the United States with India rubber cylindrical pontoons. In 1836 Capt. (afterward Col.) Lane constructed bridges over a deep and rapid river in Alabama with such pontoons, and in 1839 Mr. Armstrong submitted similar floats, 18 ft. long, 18 in. in diameter when inflated, and weighing 39 lbs. each, 3 to form 1 link of the bridge. Pontoons of inflated India rubber were, in 1846, introduced in the U. S. army, and used in the war against Mexico. They are very easily carried, from their lightness and the small space they take up when folded; but, beside being liable to be damaged and rendered useless by friction on gravel, &c., they partake the common faults of all cylindrical pontoons. These are, that when once sunk in the water to ½ of their depth, their immersion becomes greater and greater with every equal addition of load, the reverse of what should be; their ends, moreover, easily catch and lodge floating matter; and finally, 2 of them must be joined to a raft by a platform before they can be moved in the water, whereas boat pontoons are as capable of independent motion in the water as common boats, and may serve for rowing rapidly across the river a detachment of troops. To compare the buoyant power of the cylindrical pontoon with that of the boat pontoon, the following may suffice: The French pontoon supports about 20 ft. of bridge, and has a buoyancy (the weight of the superstructure deducted) of more than 150 cwt. A British raft of 2 pontoons, supporting about the same length of bridge, has a buoyancy, superstructure deducted, of only 77 cwt., ½ of which is a safe load. A pontoon train contains, beside the pontoons, the oars, boat-hooks, anchors, cables, &c., necessary to move them about in the water, and to fix them in their position, and the balks and planks (chesses) to form the platform of the bridge. With boat pontoons, every pontoon is generally secured in its place, and then the balks and chesses stretched across, with cylindrical pontoons, 2 are connected to a raft, which is anchored at the proper distance from the end of the bridge, and connected with it by balks and chesses. Where circumstances admit of it, whole links, consisting of 3, 4, or 5 pontoons bridged over, are constructed in sheltered situations above the site fixed on for the bridge, and floated down successively into their positions. In some cases, with very experienced pontoniers, the whole bridge has been constructed on one bank of the river and swung round by the current when the passage was attempted. This was done by Napoleon when crossing the Danube, the day before the battle of Wagram. The whole of this campaign is highly instructive with regard to the passing of large rivers in the face of the enemy by military bridges.—Pontoon trains are, however, not always at hand, and the military engineer must be prepared to bridge over a river, in case of need, without them. For this purpose a variety of materials and modes of construction are employed. The larger kind of boats generally found on navigable rivers are made use of for bridges of boats. If no boats are to be found, and the depth or configuration of bottom of the river renders the use of floating supports necessary, rafts of timber, floats of casks, and other buoyant bodies may be used. If the river is shallow, and has a hard and tolerably level bottom, standing supports are constructed, consisting either of piles, which form the most durable and the safest kind of bridge, but require a great deal of time and labor, or of trestles, which may be easily and quickly constructed. Sometimes wagons loaded with fascines, &c., and sunk in the deeper places of the river, will form convenient supports for the platform of a bridge. Inundations, marshes, &c., are bridged over by means of gabions. For narrow rivers and ravines, where infantry only have to pass, various kinds of suspension bridges are adopted; they are generally suspended by strong cables.—The construction of a military bridge under the actual fire of the enemy is now a matter of but rare occurrence; yet the possibility of resistance must always be provided for. On this account the bridge is generally constructed in a reëntering bend of the river, so that the artillery placed right and left sweeps the ground on the opposite bank close to where the bridge is to land, and thus protects its construction. The concave bank, moreover, is generally higher than the convex one, and thus, in most cases, the advantage of command is added to that of a cross fire. Infantry are rowed across in boats or pontoons, and established immediately in front of the bridge. A floating bridge may be constructed to carry some cavalry and a few light guns across. The division of the river into several branches by islands, or a spot immediately below the junction of some smaller river, also offers advantages. In the latter, and sometimes in the former case, the several links of the bridge may be composed in sheltered water, and then floated down. The attacking party, having commonly to choose between many favorable points on a long line of river, may easily mislead his opponent by false attacks, and then effect the real passage at a distant point; and the danger of scattering the defending forces over that long line is so great, that it is nowadays preferred to keep them concentrated at some distance from the river, and march them in a body against the real point of passage as soon as it has once been ascertained, and before the enemy can have brought over all his army. It is from these causes that in none of the wars since the French revolution has the construction of a bridge on any of the large rivers of Europe been seriously contested.

Bridge-head

BRIDGE-HEAD, or Tête-de-pont, in fortification, a permanent or field work, thrown up at the further end of a bridge in order to protect the bridge, and to enable the party holding it to manœuvre on both banks of the river. The existence of bridge-heads is indispensable to those extensive modern fortresses situated on large rivers or at the junction of 2 rivers. In such a case the bridge-head is generally formed by a suburb on the opposite side and regularly fortified; thus, Castel is the bridge-head of Mentz, Ehrenbreitstein that of Coblentz, and Deutz that of Cologne. No sooner had the French got possession, during the revolutionary war, of Kehl, than they turned it into a bridge-head for Strasbourg. In England, Gosport may be considered the bridge-head of Portsmouth, although there is no bridge, and though it has other and very important functions to fulfil. As in this latter case, a fortification on the further side of a river or arm of the sea is often called a bridge-head, though there be no bridge; since the fortification, imparting the power of landing troops under its protection and preparing for offensive operations, fulfils the same functions, and comes, strategetically speaking, under the same denomination. In speaking of the position of an army behind a large river, all the posts it holds on its opposite bank are called its bridge-heads, whether they be fortresses, intrenched villages, or regular field-works, inasmuch as every one of them admits of the army debouching in safety on the other side. Thus, when Napoleon's retreat from Russia, in 1813, ceased behind the Elbe, Hamburg, Magdeburg, Wittenberg, and Torgau were his bridge-heads on the right bank of that river. In field fortification, bridge-heads are mostly very simple works, consisting of a *bonnet à prêtre*, or sometimes a horn-work or crown-work, open toward the river, and with a redoubt close in front of the bridge. Sometimes a hamlet, a group of farmhouses, or other buildings close to a bridge, may be formed into a sufficient bridge-head by being properly adapted for defence; for, with the present light-infantry tactics, such objects, when at all capable of defence, may be made to offer a resistance as great, or greater, than any field-works thrown up according to the rules of the art.

Brune

BRUNE, Guillaume Marie Anne, a marshal of the French empire, born at Brives-la-Gaillarde, March 13, 1768, died in Avignon, Aug. 2, 1815. His father sent him to Paris to study the law, but on leaving the university, financial difficulties caused him to become a printer. In the beginning of the revolution, together with Gauthier and Jourgniac de St. Méard, he published the *Journal général de la cour et de la ville*. He soon embraced the party of the revolution, enlisted in the national guard, and became an ardent member of the club of the *cordéliers*. His grand figure, martial air, and boisterous patriotism, rendered him one of the military leaders of the people in the demonstration of 1791 in the Champ de Mars, which was crushed by Lafayette's national guards. Thrown into prison, and the rumor spreading that the partisans of the court had attempted to get rid of him by odious means, Danton was instrumental in procuring his release. To the protection of the latter, among whose partisans he became prominent, he owed a military appointment during the famous days of Sept. 1792, and his sudden promotion, in Oct. 12, 1792, to the rank of colonel and adjutant-major. He served under Dumouriez in Belgium; was sent against the federalists of Calvados, advancing under Gen. Puisaye upon Paris, whom he easily defeated. He was next made a general of brigade, and participated in the battle of Hondschoote. The committee of public safety intrusted him with the mission of putting down the insurrectionary movements in the Gironde, which he did with the utmost rigor. After Danton's imprisonment, he was expected to rush to the rescue of his friend and protector, but keeping prudently aloof during the first moments of danger, he contrived to shift through the reign of terror. After the 9th Thermidor he again joined the now victorious Dantonists, and followed Fréron to Marseilles and Avignon. On the 13th Vendémiaire (Oct. 5, 1795) he acted as one of Bonaparte's under-generals against the revolted sections of Paris. After having assisted the directory in putting down the conspiracy of the camp at Grenoble (Sept. 9, 1796), he entered the Italian army in the division of Massena, and distinguished himself during the whole campaign by great intrepidity. Wishing to propitiate the chiefs of the *cordéliers*, Bonaparte attributed part of his success at Rivoli to the exertions of Brune, appointed him general of division on the battle-field, and induced the directory to instal him as commander of the second division of the Italian army, made vacant by Augereau's departure for Paris. After the peace of Campo Formio he was employed by the directory on the mission of first lulling the Swiss into security, then dividing their councils, and finally, when an army had been concentrated for that purpose, falling upon the canton of Bern, and seizing its public treasury; on which occasion Brune forgot to draw up an inventory of the plunder. Again, by dint of manœuvres, bearing a diplomatic rather than a military character, he forced Charles Emmanuel, the king of Sardinia, and the apparent ally of France, to deliver into his hands the citadel of Turin (July 3, 1798). The Batavian campaign, which lasted about 2 months, forms the great event of Brune's military life. In this campaign he defeated the combined English and Russian forces, under the command of the duke of York, who capitulated to him, promising to restore all the French prisoners taken by the English from the commencement of the anti-Jacobinic war. After the *coup d'état* of the 18th Brumaire, Bonaparte appointed Brune a member of the newly created council of state, and then despatched him against the royalists of Brittany. Sent in 1800 to the army of Italy, Brune occupied 3 hostile camps, intrenched on the Volta, drove the enemy beyond this river, and took measures for crossing it instantly. According to his orders, the army was to effect its passage at 2 points, the right wing under Gen. Dupont between a mill situated on the Volta and the village of Pozzolo, the left wing under Brune himself at Monbazon. The second part of the operations meeting with difficulties, Brune gave orders to delay its execution for 24 hours, although the right wing, which had commenced crossing on the other point, was already engaged with far superior Austrian forces. It was only due to Gen. Dupont's exertions that the right wing was not destroyed or captured, and thus the success of the whole campaign imperilled. This blunder led to his recall to Paris. From 1802 to 1804 he cut a sorry figure as ambassador at Constantinople, where his diplomatic talents were not, as in Switzerland and Piedmont, backed by bayonets. On his return to Paris, in Dec. 1804, Napoleon created him marshal in preference to generals like Lecourbe. Having for a while commanded the camp at Boulogne, he was, in 1807, sent to Hamburg as governor of the Hanseatic towns, and as commander of the reserve of the grand army. In this quality he vigorously seconded Bourrienne in his peculations. In order to settle some contested points of a truce concluded with Sweden at Schlachtow, he had a long personal interview with King Gustavus, who, in fact, proposed to him to betray his master. The manner in which he declined this offer raised the suspicions of Napoleon, who became highly incensed when Brune, drawing up a convention relating to the surrender of the island of Rügen to the French, mentioned simply the French and the Swedish armies as parties to the agreement, without any allusion to his "imperial and royal majesty." Brune was instantly recalled by a letter of Berthier, in which the latter, on the express order of Napoleon, stated "that such a scandal had never occurred since the days of Pharamond." On his return to France, he retired into private life. In 1814 he gave his adhesion to the acts of the senate, and received the cross of St. Louis from Louis XVIII. During the Hundred Days he became again a Bonapartist, and received the command of a corps of observation on the Var, where he displayed against the royalists the brutal vigor of his Jacobin epoch. After the battle of Waterloo he proclaimed the king. Starting from Toulon for Paris, he arrived at Avignon, on Aug. 2, at a moment when that town had for 15 days been doomed to carnage and incendiary fires by the royalist mob. Being recognized by them, he was shot, the mob seizing his corpse, dragging it through the streets, and throwing it into the Rhone. "Brune, Massena, Augereau, and many others," said Napoleon at St. Helena, "were intrepid depredators." In regard to his military talents he remarks: "Brune was not without a certain merit, but, on the whole, he was a *général de tribune* rather than a terrible warrior." A monument was erected to him in his native town in 1841.

Buda

BUDA, or OFEN, a city on the west bank of the Danube, formerly the capital of Hungary, and now that of the circle of Pesth; pop. of the town and its 7 suburbs, including that of Alt Ofen, which was annexed in 1850, 45,653, exclusive of the garrison and the students. It is distant from Vienna, in a straight line, 135 miles S. E., and from Belgrade 200 miles N. W. It was formerly connected with the city of Pesth, which lies on the opposite side of the river, by a bridge of boats, and since 1849 by a suspension bridge 1,250 feet long; a tunnel to connect the bridge with the fortress has been in course of construction since 1852. Buda is about 9 miles in circuit, and built around the Schlossberg, an isolated and shelving rock. Its central and highest part, called the fortress, is the most regular portion of the town, and contains many fine buildings and squares. This fortress is surrounded by walls, from which the several suburbs extend toward the river. The principal edifices of the city are the royal palace, a quadrangular structure 564 feet in length, and containing 203 apartments; the church of the ascension of the virgin, and the garrison church, both Gothic structures; the arsenal, the state palace, and the town hall. Buda contains 12 Roman Catholic churches, a Greek church, and a synagogue, several monasteries and convents, a theatre, and many important military, educational, and benevolent institutions. There are several publishing houses and 3 journals established here. The observatory, with the printing establishment of the university of Pesth, is built upon an eminence to the south of the town, 516 feet above the level of the Mediterranean, and no expense has been spared to furnish it with the best instruments. There are in various parts of the suburbs sulphurous hot springs, and relics remain of baths constructed here by the Romans and Turks, the former tenants of the place. The principal trade of the town is in the wines (chiefly red wines, resembling those of Burgundy) which are produced from the vineyards upon the neighboring heights, to the amount, it is computed, of 4,500,000 gallons annually. There are also cannon founderies, and a few manufactures of silk, velvet, cottons, woollens, and leather. The boats of the Danube steamboat navigation company are built here, giving employment to about 600 persons. Buda is the usual residence of the governor of Hungary, and of the public authorities.—It has been thought that this city occupies the site of the old Aquincum mentioned in the "Itinerary" of Antoninus. During the Hungarian monarchy, Buda was the residence of its kings, by whom it was enlarged and adorned, especially by Matthias the Great. It was taken by the Turks under Solyman the Magnificent in 1526, but was recovered the next year. It fell again into the hands of the Turks in 1529, and remained in their possession till 1686, when it was finally recovered by Charles of Lorraine, and in 1784 was again made the seat of government. Buda has been beleaguered not less than 20 times in the course of her history. The last siege took place in May, 1849, when the Hungarian army under Görgey had driven back the Austrian troops to the western frontier of the kingdom. Two plans were discussed as to further operations: first, to follow up the advantages gained, by a vigorous pursuit of the enemy on his own ground, to disperse his forces before the Russians, then marching on Hungary, could arrive, and to attempt to revolutionize Vienna; or, to remain on the defensive in front of Comorn, and to detach a strong corps for the siege of Buda, where the Austrians on their retreat had left a garrison. Görgey maintains that this latter plan was insisted on by Kossuth and Klapka; but Klapka professes to know nothing of Kossuth having sent such an order, and denies that he himself ever advised this step. From a comparison of Görgey's and Klapka's writings we must, however, confess that there still remains considerable doubt as to who is to be blamed for the march on Buda, and that the evidence adduced by Klapka is by no means conclusive. Görgey also says that his resolution was further determined by the total want of field-gun ammunition and other stores, and by his own conviction that the army would refuse to pass the frontier. At all events, all offensive movements were arrested, and Görgey marched with 30,000 men to Buda. By this move the last chance of saving Hungary was thrown away. The Austrians were allowed to recover from their defeats, to reorganize their forces, and 6 weeks afterward, when the Russians appeared on the borders of Hungary, they again advanced, 127,000 strong, while 2 reserve corps were still forming. Thus, the siege of Buda forms the turning point of the Hungarian war of 1848–'49, and if there ever really were treasonable relations between Görgey and the Austrians, they must have taken place about this time.—The fortress of Buda was but a faint remnant of that ancient stronghold of the Turks, in which they so often had repulsed all attacks of the Hungarian and imperial armies. The ditches and glacis were levelled; there remained but the main ramparts, a work of considerable height, faced with masonry. It formed in its general outline an oblong square, the sides of which were more or less irregularly broken so as to admit of a pretty efficient flanking fire. An intrenchment of recent construction led down from the eastern front to the Danube, and protected the waterworks supplying the fortress with water. The garrison consisted of 4 battalions, about a company of sappers, and the necessary allotment of gunners, under Major-Gen. Hentzi, a brave and resolute officer. Seventy-five guns were mounted on the ramparts. On May 4, after having effected the investment of the place, and after a short cannonade from heavy field-guns, Görgey summoned the garrison to surrender. This being refused, he ordered Kmety to assail the waterworks; under the protection of the fire of all disposable guns, his column advanced, but the artillery of the intrenchment, enfilading its line of march, soon drove it back. It was thus proved that an attack by main force would never carry the place, and that an artillery attack was indispensable in order first to form a practicable breach. But there were no guns at hand heavier than 12-pounders, and even for these the ammunition was deficient. After some time, however, 4 24-pounders and 1 18-pounder, and subsequently 6 mortars, arrived from Comorn. A breaching battery was constructed on a height 500 yards from the N. W. angle of the rampart, and began its fire, May 15. Previous to that day, Hentzi had bombarded the town of Pesth without any provocation, or without the chance of deriving any advantage from this proceeding. On the 16th the breach was opened, though scarcely practicable; however, Görgey ordered the assault for the following night, one column to assault the breach, 2 others to escalade the walls, and a 4th, under Kmety, to take the waterworks. The assault was everywhere unsuccessful. The artillery attack was resumed. While the breaching battery completed its work, the palisadings around the waterworks were shattered by 12-pounders, and the interior of the place was bombarded. False attacks were made every night to alarm the garrison. Late on the evening of the 20th another assault was prepared. The 4 columns and their objects of attack remained the same, and before daybreak on the 21st they advanced on the fortress. After a desperate struggle, during which Hentzi himself led the defence of the breach and fell mortally wounded, the breach was carried by the 47th Honved battalion, followed by the 34th, while Kmety stormed the waterworks, and the troops of the 3d army corps under Knezich escaladed the walls near the Vienna gate. A severe fight in the interior of the fortress ensued, but soon the garrison surrendered. Of 8,500 men, about 1,000 were killed, the rest were made prisoners. The Hungarians lost 600 men during the siege.

Bugeaud

BUGEAUD DE LA PICONNERIE, Thomas Robert, duc d'Isly, marshal of France, born at Limoges, in Oct. 1784, died in Paris, June 10, 1849. He entered the French army as a private soldier in 1804, became a corporal during the campaign of 1805, served as sub-lieutenant in the campaign of Prussia and Poland (1806–'7), was present in 1811, as major, at the sieges of Lerida, Tortosa, and Tarragona, and was promoted to the rank of lieutenant-colonel after the battle of Ordal, in Catalonia. After the first return of the Bourbons Col. Bugeaud celebrated the white lily in some doggerel rhymes; but these poetical effusions being passed by rather contemptuously, he again embraced, during the Hundred Days, the party of Napoleon, who sent him to the army of the Alps, at the head of the [illegible]th regiment of the line. On the 2d return of the Bourbons he retired to Excideuil, to the estate of his father. At the time of the invasion of Spain by the duke of Angoulême he offered his sword to the Bourbons, but the offer being declined, he turned liberal, and joined the movement which finally led to the revolution of 1830. He was chosen as a member of the chamber of deputies in 1831, and made a major-general by Louis Philippe. Appointed governor of the citadel of Blaye in 1833, he had the duchess of Berry under his charge, but earned no honor from the manner in which he discharged his mission, and became afterward known by the name of the "ex-gaoler of Blaye." During the debates of the chamber of deputies on Jan. 16, 1834, M. Larabit complaining of Soult's military dictatorship, and Bugeaud interrupting him with the words, "Obedience is the soldier's first duty," another deputy, M. Dulong, pungently asked, "What, if ordered to become a gaoler?" This incident led to a duel between Bugeaud and Dulong, in which the latter was shot. The consequent exasperation of the Parisians was still heightened by his cooperation in suppressing the Paris insurrection of April 13 and 14, 1834. The forces destined to suppress that insurrection were divided into 3 brigades, one of which Bugeaud commanded. In the *rue Transnonain* a handful of enthusiasts who still held a barricade on the morning of the 14th, when the serious part of the affair was over, were cruelly slaughtered by an overwhelming force. Although this spot lay without the circumscription made over to Bugeaud's brigade, and he, therefore, had not participated in the massacre, the hatred of the people nailed his name to the deed, and despite all declarations to the contrary, persisted in stigmatizing him as the "man of the *rue Transnonain.*" Sent, June 16, 1836, to Algeria, Gen. Bugeaud became invested with a commanding position in the province of Oran, almost independent of the governor-general. Ordered to fight Abd el Kader, and to subdue him by the display of an imposing army, he concluded the treaty of the Tafna, allowing the opportunity for military operations to slip away, and placing his army in a critical state before it had begun to act. Bugeaud fought several battles previous to this treaty. A secret article, not reduced to writing, stipulated that 30,000 boojoos (about $12,000) should be paid to Gen. Bugeaud. Called back to France, he was promoted to the rank of lieutenant-general and appointed grand officer of the legion of honor. When the secret clause of the treaty of the Tafna oozed out, Louis Philippe authorized Bugeaud to expend the money on certain public roads, thus to increase his popularity among his electors and secure his seat in the chamber of deputies. At the commencement of 1841 he was named governor-general of Algeria, and with his administration the policy of France in Algeria underwent a complete change. He was the first governor-general who had an army adequate to its task placed under his command, who exerted an absolute authority over the generals second in command, and who kept his post long enough to act up to a plan needing years for its execution. The battle of Isly (Aug. 14, 1844), in which he vanquished the army of the emperor of Morocco with vastly inferior forces, owed its success to his taking the Mussulmans by surprise, without any previous declaration of war, and when negotiations were on the eve of being concluded. Already raised to the dignity of a marshal of France, July 17, 1843, Bugeaud was now created duke of Isly. Abd el Kader having, after his return to France, again collected an army, he was sent back to Algeria, where he promptly crushed the Arabian revolt. In consequence of differences between him and Guizot, occasioned by his expedition into Kabylia, which he had undertaken against ministerial orders, he was replaced by the duke of Aumale, and, according to Guizot's expression, "enabled to come and enjoy his glory in France." During the night of Feb. 22-23, 1848, he was, on the secret advice of Guizot, ordered into the presence of Louis Philippe, who conferred upon him the supreme command of the whole armed force—the line as well as the national guard. At noon of the 23d, followed by Gens. Rulhières, Bedeau, Lamoricière, De Salles, St. Arnaud, and others, he proceeded to the general staff at the Tuileries, there to be solemnly invested with the supreme command by the duke of Nemours. He reminded the officers present that he who was about to lead them against the Paris revolutionists "had never been beaten, neither on the battle-field nor in insurrections," and for this time again promised to make short work of the "rebel rabble." Meantime, the news of his nomination contributed much to give matters a decisive turn. The national guard, still more incensed by his appointment as supreme commander, broke out in the cry of "Down with Bugeaud!" "Down with the man of the *rue Transnonain!*" and positively declared that they would not obey his orders. Frightened by this demonstration, Louis Philippe withdrew his orders, and spent the 23d in vain negotiations. On Feb. 24, alone of Louis Philippe's council, Bugeaud still urged war to the knife; but the king already considered the sacrifice of the marshal as a means to make his own peace with the national guard. The command was consequently placed in other hands, and Bugeaud dismissed. Two days later he placed, but in vain, his sword at the command of the provisional government. When Louis Napoleon became president he conferred the command-in-chief of the army of the Alps upon Bugeaud, who was also elected by the department of Charente-Inférieure as representative in the national assembly. He published several literary productions, which treat chiefly of Algeria. In Aug. 1852, a monument was erected to him in Algiers, and also one in his native town.

Burmah

BURMAH, or THE KINGDOM OF AVA, an extensive state in the S. E. of Asia, beyond the Ganges, formerly much larger than at present. Its former limits were between lat. 9° and 27° N., ranging upward of 1,000 miles in length, and over 600 in breadth. At present the Burmese territory reaches from lat. 19° 25′ to 28° 15′ N., and from long. 93° 2′ to 100° 40′ E.; comprising a space measuring 540 miles in length from N. to S., and 420 miles in breadth, and having an area of about 200,000 sq. m. It is bounded on the W. by the province of Aracan, surrendered to the British by the Burmese treaty of 1826, and by the petty states of Tiperah, Munnipoor, and Assam, from which countries it is separated by high mountain ridges; on the S. lies the newly acquired British province of Pegu, on the N. upper Assam and Thibet, and on the E. China. The population, according to Capt. Henry Yule, does not exceed 3,000,000.—Since the cession of Pegu to the British, Burmah has neither alluvial plains nor a seaboard, its southern frontier being at least 200 miles from the mouths of the Irrawaddy, and the country rising gradually from this frontier to the north. For about 300 miles it is elevated, and beyond that it is rugged and mountainous. This territory is watered by three great streams, the Irrawaddy, its tributary the Khyen-dwem, and the Salwin. These rivers have their sources in the northern chain of mountains, and run in a southerly course to the Indian ocean. —Though Burmah has been robbed of its most fertile territory, that which remains is far from unproductive. The forests abound in valuable timber, among which teak, used for ship building, holds a prominent place. Almost every description of timber known in India is found also in Burmah. Stick lac of excellent quality, and varnish used in the manufacture of lacquered ware, are produced. Ava, the capital, is supplied with superior teak from a forest at 15 days' distance. Agriculture and horticulture are everywhere in a remarkably backward state; and were it not for the wealth of the soil and the congeniality of the climate, the state would be very poor. Fruits are not cultivated at all, and the crops are managed with little skill. Of garden vegetables, the onion and the capsicum are the most generally cultivated. Yams and sweet potatoes are also found, together with inconsiderable quantities of melons, cucumbers, and egg-plants. The young shoots of bamboo, wild asparagus, and the succulent roots of various aquatic plants, supply to the inhabitants the place of cultivated garden fruits. Mangoes, pineapples, oranges, custard-apples, the jack (a species of breadfruit), the papaw, fig, and the plantain (that greatest enemy of civilization), are the chief fruits, and all these grow with little or no care. The chief crops are rice (which is in some parts used as a circulating medium), maize, millet, wheat, various pulses, palms, sugar-cane, tobacco, cotton of short staple, and indigo. Sugar-cane is not generally cultivated, and the art of making sugar is scarcely known, although the plant has been long known to the people. A cheap, coarse sugar is obtained from the juice of the Palmyra palm, of which numerous groves are found, especially south of the capital. Indigo is so badly managed as to be entirely unfit for exportation. Rice in the south, and maize and millet in the north, are the standard crops. Sesamum is universally raised for cattle. On the northern hills the genuine tea-plant of China is cultivated to considerable extent; but, singularly, the natives, instead of steeping it, as they do the Chinese tea, eat the leaf prepared with oil and garlic. Cotton is raised chiefly in the dry lands of the upper provinces.—The dense forests of Burmah abound in wild animals, among which the chief are the elephant, the one-horned rhinoceros, the tiger and leopard, the wild hog, and several species of deer. Of birds, the wild cock is common; and there are also varieties of pheasants, partridges, and quails. The domestic animals are the ox, the horse, and the buffalo. The elephant also is used as a draught animal. The camel is not known. A few goats and sheep are found, but the breed is little cared for. Asses are also little used. Dogs are neglected in the Burmese economy, but cats are numerous. Horses are used exclusively for riding, and are rarely more than thirteen hands high. The ox is the beast of draught and burden in the north; the buffalo in the south.—Of minerals, gold, carried down in the sands of the mountains, is found in the beds of the various streams. Silver mines are wrought at Bor-twang, on the Chinese frontier. The amount of gold and silver obtained annually has been estimated to approach $1,000,000. Iron is abundant in the eastern portion of Laos, but is so rudely wrought that from 30 to 40 per cent. of the metal is lost in the process of forging. The petroleum pits on the banks of the Irrawaddy produce 8,000,000 pounds per annum. Copper, tin, lead, and antimony are known to exist in the Laos country, but it is doubtful if any of these metals are obtained in considerable quantities, owing to the ignorance of the people of the methods of working ores. The mountains near the city of Ava furnish a superior quality of limestone; fine statuary marble is found 40 miles from the capital, on the banks of the Irrawaddy; amber exists so plentifully that it sells in Ava at the low price of $1 per pound; and nitre, natron, salt, and coal are extensively diffused over the entire country, though the latter is little used. The petroleum, which is produced in such abundance, is used by all classes in Burmah for burning in lamps, and as a protection against insects. It is dipped up in buckets from narrow wells sunk to a depth of from 210 to 300 feet; it bubbles up at the bottom like a living spring of water. Turpentine is found in various portions of the country, and is extensively exported to China. The oriental sapphire, ruby, topaz, and amethyst, beside varieties of the chrysoberyl and spinelle, are found in 2 districts in the beds of rivulets. All, over $50 in value, are claimed by the crown, and sent to the treasury; and no strangers are allowed to search for the stones.—From what has been said, it is evident that the Burmese have made but little advance in the practice of the useful arts. Women carry on the whole process of the cotton manufacture, using a rude loom, and displaying comparatively little ingenuity or skill. Porcelain is imported from China; British cottons are imported, and even in the interior undersell the native products; though the Burmese melt iron, steel is brought from Bengal; silks are manufactured at several places, but from raw Chinese silk; and while a very great variety of goods is imported, the exports are comparatively insignificant, those to China, with which the Burmese carry on their most extensive commerce, consisting of raw cotton, ornamental feathers, chiefly of the blue jay, edible swallows' nests, ivory, rhinoceros and deer's horns, and some minor species of precious stones. In return for this, the Burmese import wrought copper, orpiment, quicksilver, vermilion, iron pans, brass wire, tin, lead, alum, silver, gold and gold leaf, earthenware, paints, carpets, rhubarb, tea, honey, raw silk, velvets, Chinese spirits, musk, verdigris, dried fruits, paper, fans, umbrellas, shoes, and wearing apparel. Gold and silver ornaments of a very rude description are made in various parts of the country; weapons, scissors, and carpenters' tools are manufactured at Ava; idols are sculptured in considerable quantities about 40 miles from Ava, where is found a hill of pure white marble. The currency is in a wretched condition. Lead, silver, and gold, all uncoined, form the circulating medium. A large portion of the commerce is carried on by way of barter, in consequence of the difficulties attending the making of small payments. The precious metals must be weighed and assayed at every change of hands, for which bankers charge about 3½ per cent. Interest ranges from 25 to 60 per cent. per annum. Petroleum is the most universal article of consumption. For it are exchanged saltpetre, lime, paper, lacquer ware, cotton and silk fabrics, iron and brass ware, sugar, tamarinds, &c. The yonnet-ni (the standard silver of the country) has generally an alloy of copper of 10 or 15 per cent. Below $\frac{85}{100}$ the mixture does not pass current, that degree of fineness being required in the money paid for taxes.—The revenues of the empire proceed from a house tax, which is levied on the village, the village authorities afterward assessing householders according to their respective ability to pay. This tax varies greatly, as from 6 tikals per householder in Prome to 27 tikals in Tongho. Those subject to military duty, the farmers of the royal domain, and artificers employed on the public works, are exempt. The soil is taxed according to crops. The tobacco tax is paid in money; other crops pay 5 per cent. in kind. The farmers of the royal lands pay over one-half their crops. Fishing ports on lake and river are let either for a stated term or for a proportion of dried fish from the catch. These various revenues are collected by and for the use of the officers of the crown, each of whom receives, according to his importance, a district greater or less, from the proceeds of which he lives. The royal revenue is raised from the sale of monopolies of the crown, among which cotton is the chief. In the management of this monopoly, the inhabitants are forced to deliver certain articles at certain low prices to the crown officers, who sell them at an enormous advance. Thus, lead is delivered by the producers at the rate of 5 tikals per bis, or 360 lbs., and his majesty sells it at the rate of 20 tikals. The royal revenues amount, so it is stated, to about 1,820,000 tikals, or £227,500 per annum, to which must be added a further sum of £44,250, the produce of certain tolls levied in particular districts. These moneys keep the royal household. This system of taxation, though despotic, is singularly simple in its details; and a further exemplification of simplicity in government, is the manner in which the army is made to maintain itself, or, at least, to be supported by the people. The modes of enlistment are various; in some districts the volunteer system being adhered to, while in others, every 16 families are forced to furnish 2 men armed and equipped. They are further obliged to furnish to these recruits, monthly, 56 lbs. of rice and 5 rupees. In the province of Padoung every soldier is quartered upon 2 families, who receive 5 acres of tax-free land, and have to furnish the man of war with half the crops, and 25 rupees per annum, beside wood and other minor necessities. The captain of 50 men receives 10 tikals (the tikal is worth $1¼, or 2½ rupees) each from 6 families, and half the crop of a 7th. The bo, or centurion, is maintained by the labor of 52 families, and the bo-gyi, or colonel, raises his salary from his own officers and men. The Burman soldier fights well under favoring circumstances, but the chief excellence of a Burman army corps lies in the absence of the *impedimenta;* the soldier carries his bed (a hammock) at one end of his musket, his kettle at the other, and his provisions (rice) in a cloth about his waist.—In physical conformation, the Burmese appear to be of the same race which inhabits the countries between Hindostan and China, having more of the Mongolian than of the Hindoo type. They are short, stout, well proportioned, fleshy, but active; with large cheek-bones, eyes obliquely placed, brown but never very dark complexion, coarse, lank, black hair, abundant, and more beard than their neighbors, the Siamese. Major Allen, in a memoir to the East India government, gives them credit for frankness, a strong sense of the ridiculous, considerable readiness of resource, little patriotism, but much love of home and family; comparatively little prejudice against strangers, and a readiness to acquire the knowledge of new arts, if not attended with too much mental exertion. They are sharp traders, and have a good deal of a certain kind of enterprise; are temperate, but have small powers of endurance; have more cunning than courage; though not bloodthirsty by nature, have borne phlegmatically the cruelties of their various kings; and without being naturally liars and cheats, are yet great braggarts and treacherous.—The Burmese are Buddhists by faith, and have kept the ceremonies of their religion freer from intermixture with other religions than elsewhere in India and China. The Burmese Buddhists avoid, to some extent, the picture worship practised in China, and their monks are more than usually faithful to their vows of poverty and celibacy. Toward the close of the last century, the Burman state religion was divided by 2 sects, or offshoots from the ancient faith. The first of these entertained a belief similar in some respects to pantheism, believing that the godhead is diffused over and through all the world and its creatures, but that it appears in its highest stages of development in the Buddhists themselves. The other rejects entirely the doctrine of the metempsychosis, and the picture worship and cloister system of the Buddhists; considers death as the portal to an everlasting happiness or misery, according to the conduct of the deceased, and worships one supreme and all-creating spirit (*Nat*). The present king, who is a zealous devotee to his faith, has already publicly burned 14 of these heretics, both parties of whom are alike outlawed. They are, nevertheless, according to Capt. Yule, very numerous, but worship in secret.—The early history of Burmah is but little known. The empire attained its acme of power in the 11th century, when the capital was in Pegu. About the beginning of the 16th century the state was split into several minor and independent governments, which made war upon each other; and in 1554, when the king Tshen-byoo Myayen took Ava, he had subdued to himself all the valley of the Irrawaddy, and had even subjected Siam. After various changes, Alompra, the founder of the present dynasty (who died in 1760), once more raised the empire to something like its former extent and power. Since then the British have taken from it its most fertile and valuable provinces.—The government of Burmah is a pure despotism, the king, one of whose titles is lord of life and death, dispensing imprisonment, fines, torture, or death, at his supreme will. The details of the government are carried out by the hlwot-dau, or council of state, whose presiding officer is the pre-nominated heir-apparent to the throne, or if there is no heir named, then a prince of the blood royal. In ordinary times the council is composed of 4 ministers, who have, however, no distinct departments, but act wherever chance directs. They form also a high court of appeal, before whom suits are brought for final adjudication; and in their individual capacity, they have power to give judgment on cases which are not brought up to the collective council. As they retain 10 per cent. of the property in suit for the costs of the judgment, they derive very handsome incomes from this source. From this and other peculiarities of the Burmese government, it is easily seen that justice is rarely dealt out to the people. Every office-holder is at the same time a plunderer; the judges are venal, the police powerless, robbers and thieves abound, life and property are insecure, and every inducement to progress is wanting. Near the capital the power of the king is fearful and oppressive. It decreases with distance, so that in the more distant provinces the people pay but little heed to the behests of the lord of the white elephant, elect their own governors, who are ratified by the king, and pay but slight tribute to the government. Indeed, the provinces bordering on China display the curious spectacle of a people living contentedly under two governments, the Chinese and Burmese taking a like part in the ratification of the rulers of these localities, but, wisely, generally settling on the same men. Notwithstanding various British embassies have visited Burmah, and although missionary operations have been carried on there more successfully than elsewhere in Asia, the interior of Burmah is yet a complete *terra incognita*, on which modern geographers and map-makers have ventured some wild guesses, but concerning which they know very little in detail.—(See "Narrative of the Mission sent by the Governor-General of India, to the Court of Ava, 1855," by Capt. Henry Yule. London, 1858.)

Camp

CAMP, a place of repose for troops, whether for one night or a longer time, and whether in tents, in bivouac, or with any such shelter as may be hastily constructed. Troops are cantoned when distributed among villages, or when placed in huts at the end of a campaign. Barracks are permanent military quarters. Tents were deemed unwholesome by Napoleon, who preferred that the soldier should bivouac, sleeping with his feet toward the fire, and protected from the wind by slight sheds and bowers. Major Sibley, of the American army, has invented a tent which will accommodate 20 cavalry soldiers, with their accoutrements, all sleeping with their feet toward a fire in its centre. Bivouac tents have been introduced into the French service since 1837. They consist of a tissue of cotton cloth impregnated with caoutchouc, and thus made water-proof. Every man carries a portion of this cloth, and the different pieces are rapidly attached together by means of clasps. In the selection of a camp, good water within a convenient distance is essential, as is the proximity of woods for firewood and means of shelter. Good roads, canals, or navigable streams are important to furnish the troops with the necessaries of life, if they are encamped for a long period. The vicinity of swamps or stagnant water is to be avoided. The ground to be suitable for defence must admit of manœuvres of troops. As far as possible the cavalry and infantry should be established on a single line, the former upon the wings, the latter in the centre. The shelters or huts are arranged, as nearly as the nature of the ground admits, in streets perpendicular to the front, and extending from one end of the camp to the other. In arranging a camp, however, no universal rule can be laid down, but the commander must decide according to circumstances whether to form his army in 1 or 2 lines, and upon the relative positions of infantry, cavalry, and artillery. The guards of camps are: 1, the camp-guard, which serves to keep good order and discipline, prevent desertions, and give the alarm; 2, detachments of infantry and cavalry, denominated pickets, stationed in front and on the flanks, which intercept reconnoitring parties of the enemy, and give timely notice of a hostile approach; and 3, grand guards, or outposts, which are large detachments posted in surrounding villages, farm-houses, or small field works, from which they can watch the movements of the enemy. They should not be so far from the camp as to be beyond succor in case of attack. Immediately after arriving on the ground, the number of men to be furnished for guards and pickets are detailed; the posts to be occupied by them are designated; the places for distribution of provisions mentioned; and, in general, all arrangements made concerning the interior and exterior police and service of the camp.—One of the most ancient camps mentioned in history is that of the Israelites at their exodus from Egypt. It formed a large square, divided for the different tribes, had in the middle the camp of the Levites with the tabernacle, and a principal gate or entrance, which, with an adjacent open space, was at the same time a forum and market-place. But the form, the dimensions, and the intrenchments of the regular military camps of the Hebrews, or their enemies, can scarcely be traced.—The camp of the Greeks before Troy was close upon the sea-shore, to shelter their ships drawn upon the land, divided into separate quarters for the different tribes, and fortified with ramparts fronting the city and the sea, and externally with a high mount of earth, strengthened with wooden towers against the sallies of the besieged. The bravest of their chiefs, as Achilles and Ajax, were posted at the extremities. The camp of the Lacedæmonians was circular, and not without the regular precautions of sentries and videttes.—The Roman camp varied according to the season of the year, the length of time it was to be occupied, the number of legions, as well as the nature of the ground, and other circumstances. A historian of the time of the empire mentions camps of every shape, circular, oblong, &c.; but the regular form of the Roman camp was quadrangular. Its place was determined by augurs and according to the 4 quarters, with the front to the rising sun; it was measured with a gnomon; a square of 700 feet was regarded as sufficient for 20,000 men. It was divided into an upper and lower part, separated by a large open space, and by 2 chief lines (*decumana* and *cardo*), running from E. to W., and from N. to S., and by several streets. It had 4 gates, the principal of which were the decuman and the prætorian, which no soldier could pass without leave, under pain of death, and was surrounded with a rampart, separated by a space of 200 feet from the inner camp, a ditch, and a mound of earth. All these intrenchments were made by the soldiers themselves, who handled the pickaxe and the spade as dexterously as the sword or the lance; they levelled the ground, and fixed the palisades, which they carried along, around the intrenchments into a kind of hedge of irregular points. In the middle of the upper division was the pavilion of the general (*prætorium*), forming a square of 200 feet; around it the *auguraculum*, the *quæstorium*, or quarters of the treasurers of the army, the *forum*, serving as a market and meeting place, and the tents of the *legati*, those of the tribunes opposite their respective legions, and of the commanders of foreign auxiliary troops. In the lower division were the tents of the inferior officers and the legions, the Roman horse, the *triarii*, the *principes*, the *hastati*, &c.; and on the flanks the companies of foreign horse and foot, carefully kept apart. The tents were covered with skins, each containing 10 soldiers, and their *decanus;* the centurions and standard-bearers at the head of their companies. In the space between the 2 divisions, which was called *principia*, were the platform of the general, for the exercise of justice as well as for harangues, the altar, the sacred images, and the not less sacred military ensigns. In exceptional cases the camp was surrounded with a wall of stones, and sometimes even the quarters of the soldiers were of the same material. The whole camp offered the aspect of a city; it was the only fortress the Romans constructed. Among the most permanent memorials of the Roman occupation of Britain is the retention of the Latin *castra* (camp), as, in whole or part, the name of a great number of places first occupied by them as military posts, as Doncaster, Leicester, Worcester, Chester, Winchester, &c.—The camps of the barbarous nations of antiquity were often surrounded with a fortification of wagons and carts, as for instance, that of the Cimbri, in their last battle against the Romans (101 B. C.), which camp was so fiercely defended, after their defeat, by their wives.—An INTRENCHED CAMP is a camp surrounded by defensive works, which serves also as a fortification, and is intended accordingly for prolonged use.

Campaign

CAMPAIGN. This term is very often used to denote the military operations which are carried on during a war within a single year; but if these operations take place on 2 or more independent seats of war, it would be scarcely logical to comprise the whole of them under the head of one campaign. Thus what may be loosely called the campaign of 1800 comprises 2 distinct campaigns, conducted each quite independently of the other: the campaign of Italy (Marengo), and the campaign of Germany (Hohenlinden). On the other hand, since the almost total disuse of winter quarters, the end of the year does not always mark the boundary between the close of one distinct series of warlike operations and the commencement of another. There are nowadays many other military and political considerations far more important in war than the change of the seasons. Thus each of the campaigns of 1800 consists of 2 distinct portions: a general armistice extending over the time from July to September divides them, and although the campaign of Germany is brought to a close in Dec. 1800, yet that of Italy continues during the first half of Jan. 1801. Clausewitz justly observes that the campaign of 1812 does evidently not end with Dec. 31 of that year, when the French were still on the Niemen, and in full retreat, but with their arrival behind the Elbe in Feb. 1813, where they again collected their forces, the impetus which drove them homeward having ceased. Still, winter remaining always a season during which fatigue and exposure will, in our latitudes, reduce active armies at an excessive rate, a mutual suspension of operations and recruiting of strength very often coincide with that time of the year; and although a campaign, in the strict sense of the word, means a series of warlike operations closely connected together by one strategetical plan and directed toward one strategetical object, campaigns may still in most cases very conveniently be named by the year in which their decisive actions are fought.

Captain

CAPTAIN, the rank designating a commander of a company in infantry, or of a squadron or troop in cavalry, or the chief officer of a ship of war. In most continental armies in Europe captains are considered subalterns; in the British army they form an intermediate rank between the field officer and the subaltern, the latter term comprising those commissioned officers only whose rank does not imply a direct and constant command. In the U. S. army the captain is responsible for the arms, ammunition, clothing, &c., of the company under his command. The duties of a captain in the navy are very comprehensive, and his post is one of great responsibility. In the British service he ranks with a lieut.-colonel in the army, until the expiration of 3 years from the date of his commission, when he takes rank with a full colonel. In the old French service he was forbidden to leave his ship under pain of death, and was to blow it up rather than let it fall into the hands of an enemy. The title of captain is also applied to masters of merchant or passenger vessels, and to various petty officers on ships of the line, as captain of the forecastle, of the hold, of the main and fore tops, &c. The word is of Italian origin, meaning a man who is at the head of something, and in this sense it is often used as synonymous with a general-in-chief, especially as regards his qualities for command.

Carabine

CARABINE, or CARBINE, a short barrelled musket adapted to the use of cavalry. In order to admit of its being easily loaded on horseback, the barrel ought not to be more than 2 feet 6 inches long, unless it be breech-loading; and to be easily managed with one hand only, its weight must be less than that of an infantry musket. The bore, too, is in most services rather less than that of the infantry firearm. The carabine may have either a smooth or a rifled bore; in the first case, its effect will be considerably inferior to that of the common musket; in the second, it will exceed it in precision for moderate distances. In the British service, the cavalry carry smooth-bored carabines; in the Russian cavalry, the light horse all have rifled carabines, while of the cuirassiers ¼ have rifled, and the remaining ¾ smooth barrels to their carabines. The artillery, too, in some services (French and British especially), carry carabines; those of the British are on the principle of the new Enfield rifle. Carabine-firing was at one time the principal mode of cavalry fighting, but now it is principally used on outpost duty, and with cavalry skirmishing. In French military works, the expression *carabine* always means an infantry rifle, while for a cavalry carabine the word *mousqueton* is adopted.

Carcass

CARCASS, a shell filled with inflammable composition, the flame of which issues through 3 or 4 holes, and is so violent that it can scarcely be extinguished. They are thrown from mortars, howitzers, and guns, in the same way as common shells, and burn from 3 to 10 minutes. The composition is either melted over a fire, and poured hot into the shell, or it is worked into a compact mass by the aid of liquid grease, and then crammed into the shell. The fuse holes are stopped with corks or wooden stoppers, through which a tube, filled with fuse-composition, passes into the shell. Formerly these carcasses were cast with a partition or diaphragm, like the present shrapnell shells, the bottom part being destined to receive a bursting charge of gunpowder; but this complication is now done away with. Another kind of carcasses was formerly in use, constructed like a light ball, on two circular iron hoops, crossing each other at right angles, over which canvas was spread, thus forming an imperfectly spheroidal body, which was filled with a similar composition, containing mostly gunpowder and pitch. These carcasses, however, have been abandoned, because their great lightness made it almost impossible to throw them to any distance, or with any precision. The compositions for filling our modern carcasses vary considerably, but they each and all consist chiefly of saltpetre and sulphur, mixed with a resinous or fatty substance. Thus the Prussian service uses 75 parts saltpetre, 25 parts sulphur, 7 parts mealed powder, and 33 parts colophony. The British use saltpetre 100 parts, sulphur 40 parts, rosin 30 parts, antimony 10 parts, tallow 10 parts, turpentine 10 parts. Carcasses are chiefly used in bombardments, and sometimes against shipping, though in this latter use they have been almost entirely superseded by red-hot shot, which is easier prepared, of greater precision and of far more incendiary effect.

Carronade

CARRONADE, a short piece of iron ordnance, first constructed at the Carron foundery, Scotland, in 1779, for the use of the British navy, and first employed against the United States. The carronades have no trunnions, but a loop under the middle of the piece, by which they are fastened to the carriage. The bore has a chamber, and the muzzle is scooped out like a cup. They are very short and light, there being about 60 or 70 lbs. of the gun to 1 lb. of the weight of the solid shot, the length varying from 7 to 8 calibres. The charge, consequently, cannot but be weak, and ranges from $\frac{1}{16}$ to $\frac{1}{8}$ the weight of the shot.—Carronades, on their first introduction, found great favor with naval men. Their lightness and insignificant recoil allowed great numbers of them to be placed on board the small men-of-war of those times. Their ranges appeared proportionably great, which was caused: 1, by a reduced windage, and, 2, by their great angle of dispart, arising from the thickness of metal around the breech, and the shortness of the gun; and the great weight of metal projected by them rendered them at close quarters very formidable. They were adopted in the U. S. service about 1800. It was, however, soon discovered that this kind of cannon could not compete with longer and heavier guns, throwing their projectiles with full charge and at low elevations. Thus, it has been ascertained that the common long guns of the British service have at 2° elevation, and the shell guns at 3°, the same range as the carronades of corresponding calibre at 5° (viz., about 1,200 yards). And, as the chance of hitting decreases as the elevation increases, the use of carronades beyond 1,200 yards and an elevation of 5° is completely out of the question; whereas, long guns may with considerable effect be used at ranges up to a mile, and even 2,000 yards. This was strikingly exemplified by the 2 contending squadrons on Lakes Erie and Ontario, during the Anglo-American war of 1812–'14. The American vessels had long guns, while the British were mainly armed with carronades. The Americans manœuvred so as to keep just out of range of the British carronades, while their own long guns told heavily on the hulls and rigging of their opponents. In consequence of these defects, carronades have now become almost obsolete. On shore they are used by the British, now and then, on the flanks of bastions and in casemates, where but a short extent of ditch is to be flanked by grape principally. The French navy possesses a carronade with trunnions (*carronade à tourillons*); but this is in reality a powerful gun.

Cartridge

CARTRIDGE, a paper, parchment, or flannel case or bag containing the exact quantity of gunpowder used for the charge of a fire-arm, and to which, in some instances, the projectile is attached. Blank cartridge, for small arms, does not contain a bullet; ball cartridge does. In all small-arm cartridge the paper is used as a wad, and rammed down. The cartridge for the French Minié and British Enfield rifle is steeped in grease at one end, so as to facilitate ramming down. That of the Prussian needle gun contains also the fulminating composition exploded by the action of the needle. Cartridges for cannon are generally made of flannel or other light woollen cloth. In some services, those for field service at least have the projectile attached to the cartridge by means of a wooden bottom whenever practicable; and the French have partially introduced this system even into their naval service. The British still have cartridge and shot separated, in field as well as in naval and siege artillery.—An ingenious method of making paper cartridges without seams has been lately introduced into the royal arsenal, Woolwich, England. Metallic cylindrical hollow moulds, just large enough for a cartridge to slip over, are perforated with a multitude of small holes, and being introduced into the soft pulp of which cartridge paper is made, and then connected with an exhausted receiver of an air-pump, are immediately covered with a thin layer of the pulp. This, on being dried, is a complete paper tube. The moulds are arranged many together; and each one is provided with a worsted cover, like the finger of a glove, upon which the pulp collects, and this being taken off with it serves as the lining with which the best cartridges are provided.—A kind of cartridge is in use for sporting pieces, made of a network of wire containing the shot only. It is included in an outer case of paper. The charge of shot is mixed with bone dust to give compactness. When the piece is fired, the shot are carried along to a much greater distance without scattering than if charged in any other way.

Case Shot

CASE SHOT, or CANISTER SHOT, consists of a number of wrought-iron balls, packed in a tin canister of a cylindrical shape. The balls for field service are regularly deposited in layers, but for most kinds of siege and naval ordnance they are merely thrown into the case until it is filled, when the lid is soldered on. Between the bottom of the canister and the charge a wooden bottom is inserted. The weights of the balls vary with the different kinds of ordnance, and the regulations of each service. The English have, for their heavy naval guns, balls from 8 oz. to 8 lbs.; for their 9-pound field-gun, $1\frac{1}{3}$ oz. and 5 oz. balls, of which respectively 126 and 41 make up a canister for one discharge. The Prussians use 41 balls, each weighing $\frac{1}{32}$ of the weight of the corresponding round shot. The French had up to 1854 nearly the same system; how they may have altered it since the introduction of the new howitzer gun, we are unable to tell. For siege and garrison artillery, the balls are sometimes arranged round a spindle projecting from the wooden bottom, either in a bag in the shape of a grape (whence the name grape shot), or in regular layers with round wooden or iron plates between each layer, the whole covered over with a canvas bag.—The most recently introduced kind is the spherical case shot, commonly called from their inventor, the British general Shrapnell, shrapnell shells. They consist of a thin cast-iron shell (from $\frac{1}{8}$ to $\frac{1}{4}$ inch thickness of iron), with a diaphragm or partition in the middle. The lower compartment is destined to receive a bursting charge, the upper one contains leaden musket balls. A fuse is inserted containing a carefully prepared composition, the accuracy of whose burning off can be depended upon. A composition is run between the balls, so as to prevent them from shaking. When used in the field, the fuse is cut off to the length required for the distance of the enemy, and inserted into the shell. At from 50 to 70 yards from the enemy the fuse is burnt to the bottom, and explodes the shell, scattering the bullets toward the enemy precisely as if common case shot had been fired on the spot where the shell exploded. The precision of the fuses at present attained in several services is very great, and thus this new projectile enables the gunner to obtain the exact effect of grape at ranges where formerly round shot only could be used. The common case is most destructive up to 200 yards, but may be used up to 500 yards; its effect against advancing lines of infantry or cavalry at close quarters is terrible; against skirmishers it is of little use; against columns round shot is oftener applicable. The spherical case, on the other hand, is most effective at from 600 to 1,400 yards, and with a proper elevation and a long fuse, may be launched at still greater ranges with probability of effect. From its explosion near the enemy, by which the hailstorm of bullets is kept close together, it may successfully be used against troops in almost any but the skirmishing formation. After the introduction of the spherical case shot, it was adopted in almost all European services as soon as a proper fuse composition was invented by each, this forming the only difficulty; and of the great European powers, France is the only one which has not yet succeeded in this particular. Further experiments, accidents, or bribes will, however, no doubt soon place this power in possession of the secret.

Catapult

CATAPULT (Gr. κατα, against, and παλλω, to hurl), an ancient military engine for throwing stones, darts, and other missiles, invented in Syracuse, in the reign of Dionysius the elder. It acted upon the principle of the bow, and consisted of wood frame-work, a part of which was elastic, and furnished with tense cords of hair or muscle. Catapults were of various sizes, being designed either for field-service or bombardments. The largest of them projected beams 6 feet long and weighing 60 lbs. to the distance of 400 paces, and Josephus gives instances of their throwing great stones to the distance of ¼ of a mile. The Romans employed 300 of them at the siege of Jerusalem. From the time of Julius Cæsar it is not distinguished by Latin authors from the *ballista*, which was originally used only for throwing masses of stone.

Cavalry

Ab

CAVALRY (Fr. *cavalerie*, from *cavalier*, a horseman, from *cheval*, a horse), a body of soldiers on horseback. The use of the horse for riding, and the introduction of bodies of mounted men into armies, naturally originated in those countries to which the horse is indigenous, and where the climate and gramineous productions of the soil favored the development of all its physical capabilities. While the horse in Europe and tropical Asia soon degenerated into a clumsy animal or an undersized pony, the breed of Arabia, Persia, Asia Minor, Egypt, and the north coast of Africa attained great beauty, speed, docility, and endurance. But it appears that at first it was used in harness only; at least in military history the war chariot long precedes the armed horseman. The Egyptian monuments show plenty of war chariots, but with a single exception no horsemen; and that exception appears to belong to the Roman period. Still it is certain that at least a couple of centuries before the country was conquered by the Persians, the Egyptians had a numerous cavalry, and the commander of this arm is more than once named among the most important officials of the court. It is very likely that the Egyptians became acquainted with cavalry during their war with the Assyrians; for on the Assyrian monuments horsemen are often delineated, and their use in war with Assyrian armies at a very early period is established beyond a doubt. With them, also, the saddle appears to have originated. In the older sculptures the soldier rides the bare back of the animal; at a later epoch we find a kind of pad or cushion introduced, and finally a high saddle similar to that now used all over the East. The Persians and Medians, at the time they appear in history, were a nation of horsemen. Though they retained the war chariot, and even left to it its ancient precedence over the younger arm of cavalry, yet the great numerical strength of the mounted men gave the latter an importance it had never possessed in any former service. The cavalry of the Assyrians, Egyptians, and Persians consisted of that kind which still prevails in the East, and which, up to very recent times, was alone employed in northern Africa, Asia, and eastern Europe, irregular cavalry. But no sooner had the Greeks so far improved their breed of horses by crosses with the eastern horse, as to fit them for cavalry purposes, than they began to organize the arm upon a new principle. They are the creators of both regular infantry and regular cavalry. They formed the masses of fighting men into distinct bodies, armed and equipped them according to the purpose they were intended for, and taught them to act in concert, to move in ranks and files, to keep together in a definite tactical formation, and thus to throw the weight of their concentrated and advancing mass upon a given point of the enemy's front. Thus organized, they proved everywhere superior to the undrilled, unwieldy, and uncontrolled mobs brought against them by the Asiatics. We have no instance of a combat of Grecian cavalry against Persian horsemen before the time the Persians themselves had formed bodies of a more regular kind of cavalry; but there can be no doubt that the result would have been the same as when the infantry of both nations met in battle. Cavalry, at first, was organized by the horse-breeding countries of Greece only, such as Thessalia and Bœotia; but, very soon after, the Athenians formed a body of heavy cavalry, beside mounted archers for outpost and skirmishing duty. The Spartans, too, had the *élite* of their youth formed into a body of horse-guards; but they had no faith in cavalry, and made them dismount in battle, and fight as infantry. From the Greeks of Asia Minor, as well as from the Greek mercenaries serving in their army, the Persians learned the formation of regular cavalry, and there is no doubt that a considerable portion of the Persian horse that fought against Alexander the Great were more or less trained to act in compact bodies in a regular manner. The Macedonians, however, were more than a match for them. With that people horsemanship was an accomplishment indispensable to the young nobility, and cavalry held a high rank in their army. The cavalry of Philip and Alexander consisted of the Macedonian and Thessalian nobility, with a few squadrons recruited in Greece proper. It was composed of heavy horsemen—*cataphracti*—armed with helmet and breastplate, cuisses, and a long spear. It usually charged in a compact body, in an oblong or wedge-shaped column, sometimes also in line. The light cavalry, composed of auxiliary troops, was of a more or less irregular kind, and served like the Cossacks now-a-days for outpost duty and skirmishing.—The battle of the Granicus (334 B. C.) offers the first instance of an engagement in which cavalry played a decisive part. The Persian cavalry was placed at charging distance from the fords of the river. As soon as the heads of columns of the Macedonian infantry had passed the river, and before they could deploy, the Persian horse broke in upon them and drove them headlong down again into the river. This manœuvre, repeated several times over with perfect success, shows at once that the Persians had regular cavalry to oppose to the Macedonians. To surprise infantry in the very moment of its greatest weakness, viz., when passing from one tactical formation into another, requires the cavalry to be well in hand, and perfectly under the control of its commanders. Irregular levies are incapable of it. Ptolemy, who commanded the advanced guard of Alexander's army, could make no headway until the Macedonian cuirassiers passed the river, and charged the Persians in flank. A long combat ensued, but the Persian horsemen being disposed in one line without reserves, and being at last abandoned by the Asiatic Greeks in their army, were ultimately routed. The battle of Arbela (361 B. C.) was the most glorious for the Macedonian cavalry. Alexander in person led the Macedonian horse, which formed the extreme right of his order of battle, while the Thessalian horse formed the left. The Persians tried to outflank him, but in the decisive moment Alexander brought fresh men from the rear so as to overlap them in their turn; they at the same time left a gap between their left and centre. Into this gap Alexander at once dashed, separating their left from the remainder of the army, rolling it up completely, and pursuing it for a considerable distance. Then, on being called upon to send assistance to his own menaced left, he rallied his horse in a very short time, and passing behind the enemy's centre fell upon the rear of his right. The battle was thus gained, and Alexander from that day ranks among the first of the cavalry generals of all times. And to crown the work, his cavalry pursued the fugitive enemy with such ardor that its advanced guard stood the next day 75 miles in advance of the battle-field. It is very curious to observe that the general principles of cavalry tactics were as well understood at that time as they are now. To attack infantry in the formation of the march, or during a change of formation; to attack cavalry principally on its flank; to profit by any opening in the enemy's line by dashing in and wheeling to the right and left, so as to take in flank and rear the troops placed next to such a gap; to follow up a victory by a rapid and inexorable pursuit of the broken enemy—these are among the first and most important rules that every modern cavalry officer has to learn. After Alexander's death we hear no more of that splendid cavalry of Greece and Macedon. In Greece infantry again prevailed, and in Asia and Egypt the mounted service soon degenerated.—The Romans never were horsemen. What little cavalry they had with the legions was glad to fight on foot. Their horses were of an inferior breed, and the men could not ride. But on the southern side of the Mediterranean a cavalry was formed, which not only rivalled, but even outshone that of Alexander. The Carthaginian generals, Hamilcar and Hannibal, had succeeded in forming, beside their Numidian irregular horsemen, a body of first-rate regular cavalry, and thus created an arm which almost everywhere insured them a victory. The Berbers of north Africa are, up to the present day, a nation of horsemen, at least in the plains, and the splendid Barb horse which carried Hannibal's swordsmen into the deep masses of the Roman infantry, with a rapidity and vehemence unknown before, still mounts the finest regiments of the whole French cavalry, the *chasseurs d'Afrique*, and is by them acknowledged to be the best war-horse in existence. The Carthaginian infantry was far inferior to that of the Romans, even after it had been long trained by its two great chiefs; it would not have had the slightest chance against the Roman legions, had it not been for the assistance of that cavalry which alone made it possible for Hannibal to hold out 16 years in Italy; and when this cavalry had been worn out by the wear and tear of so many campaigns, not by the sword of the enemy, there was no longer a place in Italy for him. Hannibal's battles have that in common with those of Frederic the Great, that most of them were won by cavalry over first-rate infantry; and, indeed, at no other time has cavalry performed such glorious deeds as under those two great commanders. From what nation, and upon what tactical principles, Hamilcar and Hannibal formed their regular cavalry, we are not precisely informed. But as their Numidian light horse are always clearly distinguished from the heavy or regular cavalry, we may conclude that the latter was not composed of Berber tribes. There were very likely many foreign mercenaries and some Carthaginians; the great mass, however, most probably consisted of Spaniards, as it was formed in their country, and as even in Cæsar's time Spanish horsemen were attached to most Roman armies. Hannibal being well acquainted with Greek civilization, and Greek mercenaries and soldiers of fortune having before his time served under the Carthaginian standards, there can scarcely be a doubt that the organization of the Grecian and Macedonian heavy cavalry served as the basis for that of the Carthaginian. The very first encounter in Italy settled the question of the superiority of the Carthaginian horse. At the Ticinus (218 B. C.), the Roman consul Publius Scipio, while reconnoitring with his cavalry and light infantry, met with the Carthaginian cavalry led by Hannibal on a similar errand. Hannibal at once attacked. The Roman light infantry stood in first line, the cavalry formed the second. The Carthaginian heavy horse charged the infantry, dispersed it, and then fell at once on the Roman cavalry in front, while the Numidian irregulars charged their flank and rear. The battle was short. The Romans fought bravely, but they had no chance whatever. They could not ride; their own horses vanquished them; frightened by the flight of the Roman skirmishers, who were driven in upon them and sought shelter between them, they threw off many of their riders and broke up the formation. Other troopers, not trusting to their horsemanship, wisely dismounted and attempted to fight as infantry. But already the Carthaginian cuirassiers were in the midst of them, while the inevitable Numidians galloped round the confused mass, cutting down every fugitive who detached himself from it. The loss of the Romans was considerable, and Publius Scipio himself was wounded. At the Trebia, Hannibal succeeded in enticing the Romans to cross that river, so as to fight with this barrier in their rear. No sooner was this accomplished than he advanced with all his troops against them and forced them to battle. The Romans, like the Carthaginians, had their infantry in the centre; but opposite to the 2 Roman wings formed by cavalry, Hannibal placed his elephants, making use of his cavalry to outflank and overlap both wings of his opponents. At the very outset of the battle, the Roman cavalry, thus turned and outnumbered, was completely defeated; but the Roman infantry drove back the Carthaginian centre and gained ground. The victorious Carthaginian horse now attacked them in front and flank; they compelled them to desist from advancing, but could not break them. Hannibal, however, knowing the solidity of the Roman legion, had sent 1,000 horsemen and 1,000 picked foot soldiers under his brother Mago by a roundabout way to their rear. These fresh troops now fell upon them and succeeded in breaking the second line; but the first line, 10,000 men, closed up, and in a compact body forced their way through the enemy, and marched down the river toward Placentia, where they crossed it unmolested. In the battle of Cannæ (216 B. C.), the Romans had 80,000 infantry and 6,000 cavalry; the Carthaginians, 40,000 infantry and 10,000 cavalry. The cavalry of Latium formed the Roman right wing, leaning on the river Aufidus; that of the allied Italians stood on the left, while the infantry formed the centre. Hannibal, too, placed his infantry in the centre, the Celtic and Spanish levies again forming the wings, while between them, a little further back, stood his African infantry, now equipped and organized on the Roman system. Of his cavalry, he placed the Numidians on the right wing, where the open plain permitted them, by their superior mobility and rapidity, to evade the charges of the Italian heavy horse opposed to them; while the whole of the heavy cavalry, under Hasdrubal, was stationed on the left, close to the river. On the Roman left, the Numidians gave the Italian cavalry plenty to do, but from their very nature as irregular horse could not break up their close array by regular charges. In the centre, the Roman infantry soon drove back the Celts and Spaniards, and then formed into a wedge-shaped column in order to attack the African infantry. These, however, wheeled inward, and charging the unwieldy mass in line, broke its impetus; and there the battle, now, became a standing fight. But Hasdrubal's heavy horse had, in the mean time, prepared the defeat of the Romans. Having furiously charged the Roman cavalry of the right wing, they dispersed them after a stout resistance, passed, like Alexander at Arbela, behind the Roman centre, fell upon the rear of the Italian cavalry, broke it completely, and, leaving it an easy prey to the Numidians, formed for a grand charge on the flanks and rear of the Roman infantry. This was decisive. The unwieldy mass, attacked on all sides, gave way, opened out, was broken, and succumbed. Never was there such complete destruction of an army. The Romans lost 70,000 men; of their cavalry, only 70 men escaped. The Carthaginians lost not quite 6,000, ⅔ of whom belonged to the Celtic contingents, which had had to bear the brunt of the first attack of the legions. Of Hasdrubal's 6,000 regular horse, which had won the whole of the battle, not more than 200 men were killed and wounded. The Roman cavalry of later times was not much better than that of the Punic wars. It was attached to the legions in small bodies, never forming an independent arm. Beside this legionary cavalry, there were in Cæsar's time Spanish, Celtic, and German mercenary horsemen, all of them more or less irregular. No cavalry serving with the Romans ever performed things worthy of mention; and so neglected and ineffective was this arm, that the Parthian irregulars of Khorassan remained extremely formidable to Roman armies. In the eastern half of the empire, however, the ancient passion for horses and horsemanship retained its sway; and Byzantium remained, up to its conquest by the Turks, the great horse mart and riding academy of Europe. Accordingly, we find that during the momentary revival of the Byzantine empire, under Justinian, its cavalry was on a comparatively respectable footing; and in the battle of Capua, in A. D. 552, the eunuch Narses is reported to have defeated the Teutonic invaders of Italy principally by means of this arm.—The establishment, in all countries of western Europe, of a conquering aristocracy of Teutonic origin, led to a new era in the history of cavalry. The nobility took everywhere to the mounted service, under the designation of men-at-arms (*gens d'armes*), forming a body of horse of the heaviest description, in which not only the riders but also the horses were covered with defensive armor of metal. The first battle at which such cavalry appeared was that at Poitiers, where Charles Martel, in 732, beat back the torrent of Arab invasion. The Frankish knighthood, under Eudes, duke of Aquitania, broke through the Moorish ranks and took their camp. But such a body was not fit for pursuit; and the Arabs, accordingly, under shelter of their indefatigable irregular horse, retired unmolested into Spain. From this battle dates a series of wars in which the massive but unwieldy regular cavalry of the West fought the agile irregulars of the East with varied success. The German knighthood measured swords, during nearly the whole of the 10th century, with the wild Hungarian horsemen, and totally defeated them by their close array at Merseburg in 933, and at the Lech in 955. The Spanish chivalry, for several centuries, fought the Moorish invaders of their country, and ultimately conquered them. But when the occidental "heavies" transferred the seat of war, during the crusades, to the eastern homes of their enemies, they were in their turn defeated, and in most cases completely destroyed; neither they nor their horses could stand the climate, the immensely long marches, and the want of proper food and forage. These crusades were followed by a fresh irruption of eastern horsemen into Europe, that of the Mongols. Having overrun Russia, and the provinces of Poland, they were met at Wahlstatt in Silesia, in 1241, by a combined Polish and German army. After a long struggle, the Asiatics defeated the worn-out steel-clad knights, but the victory was so dearly bought that it broke the power of the invaders. The Mongols advanced no further, and soon, by divisions among themselves, ceased to be dangerous, and were driven back. During the whole of the middle ages, cavalry remained the chief arm of all armies: with the eastern nations the light irregular horse had always held that rank; with those of western Europe, the heavy regular cavalry formed by the knighthood was in this period the arm which decided every battle. This preëminence of the mounted arm was not so much caused by its own excellence, for the irregulars of the East were incapable of orderly fight, and the regulars of the West were clumsy beyond belief in their movements; it was principally caused by the bad quality of the infantry. Asiatics as well as Europeans held that arm in contempt; it was composed of those who could not afford to appear mounted, principally of slaves or serfs. There was no proper organization for it; without defensive armor, with a pike and sword for its sole weapons, it might now and then by its deep formation withstand the furious but disorderly charges of eastern horsemen; but it was resistlessly ridden over by the invulnerable men-at-arms of the West. The only exception was formed by the English infantry, which derived its strength from its formidable weapon, the long-bow. The numerical proportion of the European cavalry of these times to the remainder of the army was certainly not as strong as it was a few centuries later, nor even as it is now. Knights were not so exceedingly numerous, and in many large battles we find that not more than 800 or 1,000 of them were present. But they were generally sufficient to dispose of any number of foot soldiers, as soon as they had succeeded in driving from the field the enemy's men-at-arms. The general mode of fighting of these men-at-arms was in line, in single rank, the rear rank being formed by the esquires, who wore, generally speaking, a less complete and heavy suit of armor. These lines, once in the midst of the enemy, soon dissolved themselves into single combatants, and finished the battle by sheer hand-to-hand fighting. Subsequently, when firearms began to come into use, deep masses were formed, generally squares; but then the days of chivalry were numbered. During the 15th century, not only was artillery introduced into the field of battle, while part of the infantry, the skirmishers of those times, were armed with muskets, but a general change took place in the character of infantry. This arm began to be formed by the enlistment of mercenaries who made a profession of military service. The German *Landsknechte* and the Swiss were such professional soldiers, and they very soon introduced more regular formations and tactical movements. The ancient Doric and Macedonian phalanx was, in a manner, revived; a helmet and a breastplate somewhat protected the men against the lance and sword of the cavalry; and when, at Novara (1513), the Swiss infantry drove the French knighthood actually from the field, there was no further use for such valiant but unwieldy horsemen. Accordingly, after the insurrection of the Netherlands against Spain, we find a new class of cavalry, the German *Reiters* (*reitres* of the French), raised by voluntary enlistment, like the infantry, and armed with helmet and breastplate, sword and pistols.

They were fully as heavy as the modern cuirassiers, yet far lighter than the knights. They soon proved their superiority over the heavy men-at-arms. These now disappear, and with them the lance; the sword and short firearms now form the general armature for cavalry. About the same time (end of the 16th century) the hybrid arm of dragoons was introduced, first in France, then in the other countries of Europe. Armed with muskets, they were intended to fight, according to circumstances, either as infantry or as cavalry. A similar corps had been formed by Alexander the Great under the name of the *dimachæ*, but it had not yet been imitated. The dragoons of the 16th century had a longer existence, but toward the middle of the 18th century they had everywhere lost their hybrid character, except in name, and were generally used as cavalry. The most important feature in their formation was that they were the first body of regular cavalry which was completely deprived of defensive armor. The creation of real hybrid dragoons was again attempted, on a large scale, by the emperor Nicholas of Russia; but it was soon proved that, before the enemy, they must always be used as cavalry, and consequently Alexander II. very soon reduced them to simple cavalry, with no more pretensions to dismounted service than hussars or cuirassiers. Maurice of Orange, the great Dutch commander, formed his *Reiters* for the first time in something like our modern tactical organization. He taught them to execute charges and evolutions in separate bodies, and in more than one line; to wheel, break off, form column and line, and change front, without disorder, and in separate squadrons and troops. Thus a cavalry fight was no longer decided by one charge of the whole mass, but by the successive charges of separate squadrons and lines supporting each other. His cavalry was formed generally 5 deep. In other armies it fought in deep bodies, and where a line formation was adopted it was still from 5 to 8 deep. The 17th century, having completely done away with the costly men-at-arms, increased the numerical strength of cavalry to an enormous extent. At no other period was there so large a proportion of that arm in every army. In the 30 years' war from ⅖ to nearly ½ of each army was generally composed of cavalry; in single instances there were 2 horsemen to 1 foot soldier. Gustavus Adolphus stands at the head of cavalry commanders of this period. His mounted troops consisted of cuirassiers and dragoons, the latter fighting almost always as cavalry. His cuirassiers, too, were much lighter than those of the emperor, and soon proved their incontestable superiority. The Swedish cavalry were formed 3 deep; their orders were, contrary to the usage of the cuirassiers of most armies, whose chief arm was the pistol, not to lose time in firing, but to charge the enemy sword in hand. At this period the cavalry, which during the middle ages had generally been placed in the centre, was again placed, as in antiquity, on the wings of the army, where it was formed in 2 lines. In England, the civil war gave rise to 2 distinguished cavalry leaders. Prince Rupert, on the royalist side, had as much "dash" in him as any cavalry general, but he was almost always carried too far, lost his cavalry out of hand, and was himself so taken up with what was immediately before him, that the general always disappeared in the "bold dragoon." Cromwell, on the other hand, with quite as much dash where it was required, was a far better general; he kept his men well in hand, always held back a reserve for unforeseen events and decisive movements, knew how to manœuvre, and thus proved generally victorious over his inconsiderate opponent. He won the battles of Marston Moor and Naseby by his cavalry alone.—With most armies the use of the firearm still remained the chief employment of cavalry in battle, the Swedes and English alone excepted. In France, Prussia, and Austria, cavalry was drilled to use the carabine exactly as infantry used the musket. They fired on horseback, the line standing still all the while, by files, platoons, ranks, &c.; and when a movement for a charge was made, the line advanced at a trot, pulled up at a short distance from the enemy, gave a volley, drew swords, and then charged. The effective fire of the long lines of infantry had shaken all confidence in the charge of a cavalry which was no longer protected by armor; consequently, riding was neglected, no movements could be executed at a quick pace, and even at a slow pace accidents happened by the score to both men and horses. The drill was mostly dismounted work, and their officers had no idea whatever of the way of handling cavalry in battle. The French, it is true, sometimes charged sword in hand, and Charles XII. of Sweden, true to his national tradition, always charged full speed without firing, dispersing cavalry and infantry, and sometimes even taking field works of a weak profile. But it was reserved for Frederic the Great and his great cavalry commander, Seydlitz, to revolutionize the mounted service, and to raise it to the culminating point of glory. The Prussian cavalry, heavy men on clumsy horses, drilled for firing only, such as Frederic's father had left them to his son, were beaten in an instant at Mollwitz (1741). But no sooner was the first Silesian war brought to a close than Frederic entirely reorganized his cavalry. Firing and dismounted drill were thrown into the background, and riding was attended to. "All evolutions are to be made with the greatest speed, all wheels to be done at a canter. Cavalry officers must above all things form the men into perfect riders; the cuirassiers to be as handy and expert on horseback as a hussar, and well exercised in the use of the sword." The men were to ride every day. Riding in difficult ground, across obstacles, and fencing on horseback, were the principal drills. In a charge, no firing at all was allowed until the 1st and 2d lines of the enemy were completely broken. "Every squadron, as it advances to the charge, is to attack the enemy sword in hand, and no commander shall be allowed to let his troops fire under penalty of infamous cashiering; the generals of brigades to be answerable for this. As they advance, they first fall into a quick trot, and finally into a full gallop, but well closed; and if they attack in this way, his majesty is certain that the enemy will always be broken." "Every officer of cavalry will have always present to his mind that there are but 2 things required to beat the enemy: 1, to charge him with the greatest possible speed and force, and 2, to outflank him." These passages from Frederic's instructions sufficiently show the total revolution he carried out in cavalry tactics. He was seconded admirably by Seydlitz, who always commanded his cuirassiers and dragoons, and made such troops of them that, for vehemence and order of charge, quickness of evolutions, readiness for flank attacks, and rapidity in rallying and re-forming after a charge, no cavalry has ever equalled the Prussian cavalry of the 7 years' war. The fruits were soon visible. At Hohenfriedberg the Baireuth regiment of dragoons, 10 squadrons, rode down the whole left wing of the Austrian infantry, broke 21 battalions, took 66 stand of colors, 5 guns, and 4,000 prisoners. At Zorndorf, when the Prussian infantry had been forced to retreat, Seydlitz, with 36 squadrons, drove the victorious Russian cavalry from the field, and then fell upon the Russian infantry, completely defeating it with great slaughter. At Rossbach, Striegau, Kesselsdorf, Leuthen, and in 10 other battles, Frederic owed the victory to his splendid cavalry.—When the French revolutionary war broke out, the Austrians had adopted the Prussian system, but not so the French. The cavalry of the latter nation had, indeed, been much disorganized by the revolution, and in the beginning of the war the new formations proved almost useless. When their new infantry levies were met by the good cavalry of the English, Prussians, and Austrians, they were, during 1792 and '93, almost uniformly beaten. The cavalry, quite unable to cope with such opponents, was always kept in reserve until a few years' campaigning had improved them. Since 1796 and afterward every division of infantry had cavalry as a support; still, at Würzburg, the whole of the French cavalry was defeated by 59 Austrian squadrons (1796). When Napoleon took the direction of affairs in France, he did his best to improve the French cavalry. He found about the worst material that could be met with. As a nation, the French are decidedly the worst horsemen of Europe, and their horses, good for draught, are not well adapted for the saddle. Napoleon himself was but an indifferent rider, and neglected riding in others. Still he made great improvements, and after the camp of Boulogne, his cavalry in great part, mounted on German and Italian horses, was no despicable adversary. The campaigns of 1805 and 1806–'7 allowed his cavalry to absorb almost all the horses of the Austrian and Prussian armies, and beside, reënforced Napoleon's army by the excellent cavalry of the confederation of the Rhine and the grand duchy of Warsaw. Thus were formed those enormous masses of horsemen with which Napoleon acted in 1809, 1812, and the latter part of 1813, which, though generally designated as French, were in great part composed of Germans and Poles. The cuirass, which had been entirely done away with in the French army shortly before the revolution, was restored to a portion of the heavy cavalry by Napoleon. In other respects the organization and equipment remained nearly the same, except that with his Polish auxiliaries he received some regiments of light horse, armed with the lance, the costume and equipment of which were soon imitated in other armies. But in the tactical use of cavalry he introduced a complete change. According to the system of composing divisions and army corps of all 3 arms, a portion of the light cavalry was attached to each division or corps; but the mass of the arm, and especially all the heavy horse, were held together in reserve for the purpose of striking at a favorable moment a great decisive blow, or, in case of need, of covering the retreat of the army. These masses of cavalry, suddenly appearing on a given point of the battle-field, have often acted decisively; still, they never gained such brilliant successes as the horsemen of Frederic the Great. The cause of this is to be looked for partly in the changed tactics of infantry, which, by selecting chiefly broken ground for its operations, and always receiving cavalry in a square, made it more difficult for the latter arm to achieve such great victories as the Prussian horsemen had obtained over the long, thin infantry lines of their opponents. But it is also certain that Napoleon's cavalry was not equal to that of Frederic the Great, and that Napoleon's cavalry tactics were not in every instance an improvement upon those of Frederic. The indifferent riding of the French compelled them to charge at a comparatively slow pace, at a trot or a collected canter; there are but few instances where they charged at a gallop. Their great bravery and close ranks made up often enough for the curtailed impetus, but still their charge was not what would now be considered good. The old system of receiving hostile cavalry standing, carabine in hand, was in very many cases retained by the French cavalry, and in every such instance were they defeated. The last example of this happened at Danigkow (April 5, 1813), where about 1,200 French cavalry thus awaited a charge of 400 Prussians, and were completely beaten in spite of their numbers. As to Napoleon's tactics, the use of great masses of cavalry with him became such a fixed rule, that not only was the divisional cavalry weakened so as to be completely useless, but also in the employment of these masses he often neglected that successive engagement of his forces which is one of the principal points in modern tactics, and which is even more applicable to cavalry than to infantry. He introduced the cavalry charge in column, and even formed whole cavalry corps into one monster column, in such formations that the extrication of a single squadron or regiment became an utter impossibility, and that any attempt at deploying was entirely out of the question. His cavalry generals, too, were not up to the mark, and even the most brilliant of them, Murat, would have cut but a sorry figure if opposed to a Seydlitz. During the wars of 1813, '14, and '15, cavalry tactics had decidedly improved on the part of Napoleon's opponents. Though to a great extent following Napoleon's system of holding cavalry in reserve in large masses, and therefore very often keeping the greater portion of the cavalry entirely out of an action, still in many instances a return to the tactics of Frederic was attempted. In the Prussian army the old spirit was revived. Blücher was the first to use his cavalry more boldly, and generally with success. The ambuscade of Haynau (1813), where 20 Prussian squadrons rode down 8 French battalions and took 18 guns, marks a turning point in the modern history of cavalry, and forms a favorable contrast to the tactics of Lützen, where the allies held 18,000 horse entirely in reserve until the battle was lost, although a more favorable cavalry ground could not be found.—The English had never adopted the system of forming large masses of cavalry, and had therefore many successes, although Napier himself admits that their cavalry was not so good at that time as that of the French. At Waterloo (where, by the way, the French cuirassiers for once charged at full speed), the English cavalry was admirably handled and generally successful, except where it followed its national weakness of getting out of hand. Since the peace of 1815, Napoleon's tactics, though still preserved in the regulations of most armies, have again made room for those of Frederic. Riding is better attended to, though still not at all to the extent it should be. The idea of receiving the enemy carabine in hand is scouted; Frederic's rule is everywhere revived, that every cavalry commander who allows the enemy to charge him, instead of charging himself, deserves to be cashiered. The gallop is again the pace of the charge; and the column attack has made way for charges in successive lines, with dispositions for flank attack, and with a possibility of manœuvring with single detachments during the charge. Still much remains to be done. A greater attention to riding, especially across country, a nearer approach in the saddle and the seat to those of the hunting-field, and above all, a reduction of the weight carried by the horse, are improvements called for in every service without exception.—From the history of cavalry let us now turn to its present organization and tactics. The recruiting of cavalry, as far as the men are concerned, is not different upon the whole from the way the other arms recruit themselves in each country. In some states, however, the natives of particular districts are destined to this service: thus in Russia, the Malorussians (natives of Little Russia); in Prussia, the Poles. In Austria, the heavy cavalry is recruited in Germany and Bohemia, the hussars exclusively in Hungary, the lancers mostly in the Polish provinces. The recruiting of the horses, however, deserves especial notice. In England, where the whole cavalry does not require in time of war above 10,000 horses, the government finds no difficulty in buying them; but in order to insure to the service the benefit of horses not worked till nearly 5 years old, 3-year-old colts, mostly Yorkshire bred, are bought and kept at government expense in depots till they are fit to be used. The price paid for the colts (£20 to £25), and the abundance of good horses in the country, make the British cavalry certainly the best mounted in the world. In Russia a similar abundance of horses exists, though the breed is inferior to the English. The remount officers buy the horses by wholesale in the southern and western provinces of the empire, mostly from Jewish dealers; they re-sell those that are unfit, and hand over to the various regiments such as are of its color (all horses being of the same color in a Russian regiment). The colonel is considered as it were proprietor of the horses; for a round sum paid to him he has to keep the regiment well mounted. The horses are expected to last 8 years. Formerly they were taken from the large breeding establishment of Volhynia and the

Ukraine, where they are quite wild; but the breaking them for cavalry purposes was so difficult that it had to be given up. In Austria the horses are partly bought, but the greater portion have of late been furnished by the government breeding establishments, which can part every year with above 5,000 5-year-old cavalry horses. For a case of extraordinary effort, a country so rich in horses as Austria can rely upon the markets of the interior. Prussia, 60 years ago, had to buy almost all her horses abroad, but now can mount the whole of her cavalry, line and landwehr, in the interior. For the line, the horses are bought at 3 years old, by remount commissaries, and sent into depots until old enough for service; 3,500 are required every year. In case of mobilization of the landwehr cavalry, all horses in the country, like the men, are liable to be taken for service; a compensation of from $40 to $70 is however paid for them. There are 8 times more serviceable horses in the country than can be required. France, of all European countries, is the worst off for horses. The breed, though often good and even excellent for draught, is generally unfit for the saddle. Government breeding studs (*haras*) have been long established, but not with the success they have had elsewhere; in 1838 these studs, and the remounting depots connected with them, could not furnish 1,000 horses to the service, bought or government bred. Gen. Laroche-Aymond considered that there were not altogether 20,000 horses in France between 4 and 7 years old, fit for cavalry service. Though the depots and studs have of late been much improved, they are still insufficient to fully supply the army. Algeria furnishes a splendid breed of cavalry horses, and the best regiments of the service, the *chasseurs d'Afrique*, are exclusively mounted with them, but the other regiments scarcely get any. Thus in case of a mobilization, the French are compelled to buy abroad, sometimes in England, but mostly in northern Germany, where they do not get the best class of horses, though each horse costs them nearly $100. Many condemned horses from German cavalry regiments find their way into the ranks of the French, and altogether the French cavalry, the *chasseurs d'Afrique* excepted, is the worst mounted in Europe.—Cavalry is essentially of 2 kinds: heavy and light. The real distinctive character of the 2 is in the horses. Large and powerful horses cannot well work together with small, active, and quick ones. The former in a charge act less rapidly, but with greater weight; the latter act more by the speed and impetuosity of the attack, and are moreover far more fit for single combat and skirmishing, for which heavy or large horses are neither handy nor intelligent enough. Thus far the distinction is necessary; but fashion, fancy, and the imitation of certain national costumes, have created numerous subdivisions and varieties, to notice which in detail would be of no interest. The heavy cavalry, at least in part, is in most countries furnished with a cuirass, which, however, is far from being shot proof; in Sardinia, its first rank carries a lance. Light cavalry is partly armed with the sword and carabine, partly with the lance. The carabine is either smooth-bored or rifled. Pistols are added in most cases to the armature of the rider; the United States cavalry alone carries the revolver. The sword is either straight, or curved to a greater or less degree; the first preferable for thrusts, the second for cuts. The question as to the advantages of the lance over the sword is still under discussion. For close encounter the sword is undoubtedly preferable; and in a charge the lance, unless too long and heavy to be wielded, can scarcely act at all, but in the pursuit of broken cavalry it is found most effective. Of nations of horsemen, almost all trust to the sword; even the Cossack abandons his lance when he has to fight against the expert swordsmen of Circassia. The pistol is useless except for a signal shot; the carabine is not very effective, even if rifled, and never will be of much real use until a breech-loading one is adopted; the revolver in skilful hands is a formidable weapon for close encounter; still the queen of weapons for cavalry is a good, sharp, handy sword.—Beside the saddle, bridle, and armed rider, the cavalry horse has to carry a valise with reserve clothing, camp utensils, grooming tackle, and in a campaign also food for the rider and forage for itself. The sum total of this burden varies in different services and classes of cavalry, between 250 and 300 lbs. for the heavy marching order, a weight which will appear enormous when compared with what private saddle horses have to carry. This overweighting the horses is the weakest point of all cavalry. Great reforms are everywhere required in this respect. The weight of the men and accoutrements can and must be reduced, but as long as the present system lasts, this drag upon the horses is always to be taken into account whenever we judge of the capabilities of exertion and endurance of cavalry. Heavy cavalry, composed of strong but, if possible, comparatively light men, on strong horses, must act principally by the force of a well-closed, solid charge. This requires power, endurance, and a certain physical weight, though not as much as would render it unwieldy. There must be speed in its movements, but no more than is compatible with the highest degree of order. Once formed for the attack, it must chiefly ride straight forward; but whatever comes in its path must be swept away by its charge. The riders need not be, individually, as good horsemen as those of light cavalry; but they must have full command over their horses, and be accustomed to ride straight forward and in a well-closed mass. Their horses, in consequence, must be less sensible to the leg, nor should they have their haunches too much under them; they should step out well in their trot, and be accustomed to keep well together in a good, long hand gallop. Light cavalry, on the contrary, with nimbler men and quicker horses, has to act by its rapidity and ubiquity. What it lacks in weight must be made up by speed and activity. It will charge with the greatest vehemence; but when preferable, it will seemingly fly in order to fall upon the enemy's flank by a sudden change of front. Its superior speed and fitness for single combat render it peculiarly fit for pursuit. Its chiefs require a quicker eye and a greater presence of mind than those of heavy horse. The men must be, individually, better horsemen; they must have their horses perfectly under control, start from a stand into a full gallop, and again stop in an instant; turn quick, and leap well; the horses should be hardy and quick, light in the mouth, and obedient to the leg, handy at turning, and especially broken in for working at a canter, having their haunches well under them. Beside rapid flank and rear attacks, ambuscades, and pursuit, the light cavalry has to do the greater part of the outpost and patrolling duty for the whole army; aptness for single combat, the foundation of which is good horsemanship, is therefore one of its principal requirements. In line, the men ride less close together, so as to be always prepared for changes of front and other evolutions.—The English have nominally 13 light and 13 heavy regiments (dragoons, hussars, lancers; the 2 regiments of life-guards alone are cuirassiers); but in reality all their cavalry, by composition and training, are heavy cavalry, and little different in the size of men and horses. For real light cavalry service they have always used foreign troops—Germans in Europe, native irregulars in India. The French have 3 kinds: light cavalry hussars and chasseurs, 174 squadrons; line cavalry, lancers and dragoons, 120 squadrons; reserve cavalry, 78 squadrons, cuirassiers and carabineers. Austria has 96 squadrons of heavy cavalry, dragoons and cuirassiers; and 193 squadrons of light, hussars and lancers. Prussia has, of the line, 80 squadrons of heavy horse, cuirassiers and lancers; and 72 squadrons of light horse, dragoons and hussars; to which may be added, in case of war, 186 squadrons of lancers of the first levy of the landwehr. The second levy of the landwehr cavalry will scarcely ever be formed separately. The Russian cavalry consists of 160 heavy squadrons, cuirassiers and dragoons; and 304 light squadrons, hussars and lancers. The formation of the dragoon corps for alternate mounted and infantry duty has been abandoned, and the dragoons incorporated with the heavy cavalry. The real light cavalry of the Russians, however, are the Cossacks, of whom they always have more than enough for all the outpost, reconnoitring, and irregular duties of their armies. In the U. S. army there are 2 regiments of dragoons, 1 of mounted riflemen, and 2 styled cavalry; all of which regiments, it has been recommended, should be called regiments of cavalry. The U. S. cavalry is really a mounted infantry.—The tactical unity in cavalry is the squadron, comprising as many men as the voice and immediate authority of one commander can control during evolutions. The strength of a squadron varies from 100 men (in England) to 200 men (in France); those of the other armies also being within these limits. Four, 6, 8, or 10 squadrons form a regiment. The weakest regiments are the English (400 to 480 men); the strongest the Austrian light horse (1,600 men). Strong regiments are apt to be unwieldy; too weak ones are very soon reduced by a campaign. Thus the British light brigade at Balaklava, not 2 months after the opening of the campaign, numbered in 5 regiments of 2 squadrons each scarcely 700 men, or just half as many as one Russian hussar regiment on the war footing. Peculiar formations are: with the British the troop or half squadron, and with the Austrians the division or double squadron, an intermediate link which alone renders it possible for one commander to control their strong regiments of horse.—Until Frederic the Great, all cavalry was formed at least 3 deep. He first formed his hussars, in 1743, 2 deep, and at the battle of Rossbach had his heavy horse formed the same way. After the 7 years' war this formation was adopted by all other armies, and is the only one now in use. For purposes of evolution the squadron is divided into 4 divisions; wheeling from line into open column of divisions, and back into line from column, form the chief and fundamental evolution of all cavalry manœuvres. Most other evolutions are only adapted either for the march (the flank march by threes, &c.), or for extraordinary cases (the close column by divisions or squadrons). The action of cavalry in battle is eminently a hand-to-hand encounter; its fire is of subordinate importance; steel —either sword or lance—is its chief weapon; and all cavalry action is concentrated in the charge. Thus the charge is the criterion for all movements, evolutions, and positions of cavalry. Whatever obstructs the facility of charging is faulty. The impetus of the charge is produced by concentrating the highest effort both of man and horse into its crowning moment, the moment of actual contact with the enemy. In order to effect this, it is necessary to approach the enemy with a gradually increasing velocity, so that the horses are put to their full speed at a short distance from the enemy only. Now the execution of such a charge is about the most difficult matter that can be asked from cavalry. It is extremely difficult to preserve perfect order and solidity in an advance at increasing pace, especially if there is much not quite level ground to go over. The difficulty and importance of riding straight forward is here shown; for unless every rider rides straight to his point, there arises a pressure in the ranks, which is soon rolled back from the centre to the flanks, and from the flanks to the centre; the horses get excited and uneasy, their unequal speed and temper comes into play, and soon the whole line is straggling along in any thing but a straight allignment, and with any thing but that closed solidity which alone can insure success. Then, on arriving in front of the enemy, it is evident that the horses will attempt to refuse running into the standing or moving mass opposite, and that the riders must prevent their doing so; otherwise the charge is sure to fail. The rider, therefore, must not only have the firm resolution to break into the enemy's line, but he must also be perfectly master of his horse. The regulations of different armies give various rules for the mode of advance of the charging cavalry, but they all agree in this point, that the line, if possible, begins to move at a walk, then trot, at from 300 to 150 yards from the enemy canter, gradually increasing to a gallop, and at from 20 to 30 yards from the enemy full speed. All such regulations, however, are subject to many exceptions; the state of the ground, the weather, the condition of the horses, &c., must be taken into consideration in every practical case. If in a charge of cavalry against cavalry both parties actually meet, which is by far the most uncommon case in cavalry engagements, the swords are of little avail during the actual shock. It is the momentum of one mass which breaks and scatters the other. The moral element, bravery, is here at once transformed into material force; the bravest squadron will ride on with the greatest self-confidence, resolution, rapidity, *ensemble*, and solidity. 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The pursuit, on the rally being sounded, is generally left to some divisions or squadrons, specially or by general regulations designated for this service; while the mass of the troops re-form to be ready for all emergencies. For the disorganized state, even of the victors, after a charge, is inducement enough to always keep a reserve in hand which may be launched in case of failure in the first instance; and thus it is that the first rule in cavalry tactics has always been, never to engage more than a portion of the disposable forces at a time. This general application of reserves will explain the variable nature of large cavalry combats, where the tide of victory ebbs and flows to and fro, either party being beaten in his turn until the last disposable reserves bring the power of their unbroken order to bear upon the disordered, surging mass, and decide the action. Another very important circumstance is the ground. No arm is so much controlled by the ground as cavalry. Heavy, deep soil will break the gallop into a slow canter; an obstacle which a single horseman would clear without looking at it, may break the order and solidity of the line; and an obstacle easy to clear for fresh horses will bring down animals that have been trotted and galloped about without food from early morning. Again, an unforeseen obstacle, by stopping the advance and entailing a change of front and formation, may bring the whole line within reach of the enemy's flank attacks. An example of how cavalry attacks should not be made, was Murat's great charge at the battle of Leipsic. He formed 14,000 horsemen into one deep mass, and advanced on the Russian infantry which had just been repulsed in an attack on the village of Wachau. The French horse approached at a trot; about 600 or 800 yards from the allied infantry they broke into a canter; in the deep ground the horses soon got fatigued, and the impulse of the charge was spent by the time they reached the squares. Only a few battalions which had suffered severely were ridden over. Passing round the other squares, the mass galloped on through the second line of infantry, without doing any harm, and finally arrived at a line of ponds and morasses which put a stop to their progress. The horses were completely blown, the men in disorder, the regiments mixed and uncontrollable; in this state two Prussian regiments and the Cossacks of the guard, in all less than 2,000 men, surprised their flanks and drove them all pell mell back again. In this instance there was neither a reserve for unforeseen emergencies, nor any proper regard for pace and distance; the result was defeat.—The charge may be made in various formations. Tacticians distinguish the charge *en muraille*, when the squadrons of the charging line have none or but very small intervals between each other; the charge with intervals, where there are from 10 to 20 yards from squadron to squadron; the charge *en échelon*, where the successive squadrons break off one after the other from one wing, and thus reach the enemy not simultaneously but in succession, which form may be much strengthened by a squadron in open column on the outward rear of the squadron forming the first *échelon;* finally, the charge in column. This last is essentially opposed to the whole of the former modes of charging, which are all of them but modifications of the line attack. The line was the general and fundamental form of all cavalry charges up to Napoleon. In the whole of the 18th century, we find cavalry charging in column in one case only, *i. e.* when it had to break through a surrounding enemy. But Napoleon, whose cavalry was composed of brave men but bad riders, had to make up for the tactical imperfections of his mounted troops by some new contrivance. He began to send his cavalry to the charge in deep columns, thus forcing the front ranks to ride forward, and throwing at once a far greater number of horsemen upon the selected point of attack than could have been done by a line attack. The desire of acting with masses, during the campaigns succeeding that of 1807, became with Napoleon a sort of monomania. He invented formations of columns which were perfectly monstrous, and which, happening to be successful in 1809, were adhered to in the later campaigns, and helped to lose him many a battle. He formed columns of whole divisions either of infantry or of cavalry, by ranging deployed battalions and regiments one behind the other. This was first tried with cavalry at Eckmühl, in 1809, where 10 regiments of cuirassiers charged in column, 2 regiments deployed in front, 4 similar lines following at distances of about 60 yards. With infantry, columns of whole divisions, one battalion deployed behind the other, were formed at Wagram. Such manœuvres might not be dangerous against the slow and methodical Austrians of the time, but in every later campaign, and with more active enemies, they ended in defeat. We have seen what a pitiable end the great charge of Murat at Wachau, in the same formation, came to. The disastrous issue of D'Erlon's great infantry attack at Waterloo was caused by its being made with this formation. With cavalry the monster column appears especially faulty, as it absorbs the most valuable resources into one unwieldy mass, which, once launched, is irretrievably out of hand, and, whatever success it may have in front, is always at the mercy of smaller bodies well in hand that are thrown on its flanks. With the materials for one such column, a second line and one or two reserves might be prepared, the charges of which might not have such an effect at first, but would certainly by their repetition ultimately obtain greater results with smaller losses. In most services, indeed, this charge in column has either been abandoned, or it has been retained as a mere theoretical curiosity, while for all practical purposes the formation of large bodies of cavalry is made in several lines at charging intervals, supporting and relieving each other during a prolonged engagement. Napoleon, too, was the first to form his cavalry into masses of several divisions, called corps of cavalry. As a means of simplifying the transmission of commands in a large army, such an organization of the reserve cavalry is eminently necessary; but when maintained on the field of battle, when these corps had to act in a body, it has never produced any adequate results. In fact, it was one of the main causes of that faulty formation of monster columns which we have already mentioned. In the present European armies, the cavalry corps is generally retained, and in the Prussian, Russian, and Austrian services, there are even established normal formations and general rules for the action of such a corps on the field of battle, all of which are based on the formation of a first and second line and a reserve, together with indications for the placing of the horse artillery attached to such a body.—We have hitherto spoken of the action of cavalry so far only as it is directed against cavalry. But one of the principal purposes for which this arm is used in battle, in fact its principal use now-a-days, is its action against infantry. We have seen that in the 18th century infantry, in battle, scarcely ever formed square against cavalry. It received the charge in line, and if the attack was directed against a flank, a few companies wheeled back, *en potence*, to meet it. Frederic the Great instructed his infantry never to form square except when an isolated battalion was surprised by cavalry; and if in such a case it had formed square, "it may march straight against the enemy's horse, drive them away, and, never heeding their attacks, proceed to its destination." The thin lines of infantry in those days met the cavalry charge with full confidence in the effect of their fire, and indeed repelled it often enough; but where they once got broken, the disaster was irreparable, as at Hohenfriedberg and Zorndorf. At present, when the column has replaced the line in so many cases, the rule is that infantry always, where it is practicable, form square to receive cavalry. There are indeed plenty of instances in modern wars where good cavalry has surprised infantry in line and had to fly from its fire; but they form the exception. The question now is, whether cavalry has a fair chance of breaking squares of infantry. Opinions are divided; but it appears to be generally admitted that, under ordinary circumstances, a good, intact infantry, not shattered by artillery fire, stands a very great chance against cavalry, while with young foot soldiers, who have lost the edge of their energy and steadiness by a hard day's fighting, by heavy losses and long exposure to fire, a resolute cavalry has the best of it. There are exceptions, such as the charge of the German dragoons at Garcia Hernandez (in 1812), where each of 3 squadrons broke an intact French square; but as a rule, a cavalry commander will not find it advisable to launch his men on such infantry. At Waterloo, Ney's grand charges with the mass of the French reserve cavalry on Wellington's centre, could not break the English and German squares, because these troops, sheltered a good deal behind the crest of the ridge, had suffered very little from the preceding cannonade, and were almost all as good as intact. Such charges, therefore, are adapted for the last stage of a battle only, when the infantry has been a good deal shattered and exhausted both by actual engagement and by passivity under a concentrated artillery fire. And in such cases they act decisively, as at Borodino and Ligny, especially when supported, as in both these cases, by infantry reserves.—We cannot enter here into the various duties which cavalry may be called upon to perform on outpost, patrolling, and escorting service, &c. A few words on the general tactics of cavalry, however, may find a place. Infantry having more and more become the main stay of battles, the manœuvres of the mounted arm are necessarily more or less subordinate to those of the former. And as modern tactics are founded upon the admixture and mutual support of the 3 arms, it follows that for at least a portion of the cavalry, all independent action is entirely out of the question. Thus the cavalry of an army is always divided into 2 distinct bodies: divisional cavalry and reserve cavalry. The first consists of horsemen attached to the various divisions and corps of infantry, and under the same commander with them. In battle, its office is to seize any favorable moments which may offer themselves to gain an advantage, or to disengage its own infantry when attacked by superior forces. Its action is naturally limited, and its strength is not sufficient to act any way independently. The cavalry of reserve, the mass of the cavalry with the army, acts in the same subordinate position toward the whole infantry of the army as the divisional cavalry does toward the infantry division to which it belongs. Accordingly, the reserve cavalry will be held in hand till a favorable moment for a great blow offers itself, either to repel a grand infantry or cavalry attack of the enemy, or to execute a charge of its own of a decisive nature. From what has been stated above, it will be evident that the proper use of the cavalry of reserve is generally during the latter stages of a great battle; but then it may be and often has been decisive. Such immense successes as Seydlitz obtained with his horse are completely out of the question now; but still, most great battles of modern times have been very materially influenced by the part cavalry has played in them. But the great importance of cavalry lies in pursuit. Infantry supported by artillery need not despair against cavalry so long as it preserves its order and steadiness; but once broken, no matter by what cause, it is a prey to the mounted men that are launched against it. There is no running away from the horses; even on difficult ground, good horsemen can make their way; and an energetic pursuit of a beaten army by cavalry is always the best and the only way to secure the full fruits of the victory. Thus, whatever supremacy in battles may have been gained by infantry, cavalry still remains an indispensable arm, and will always remain so; and now, as heretofore, no army can enter the lists with a fair chance of success unless it has a cavalry that can both ride and fight.

Coehorn

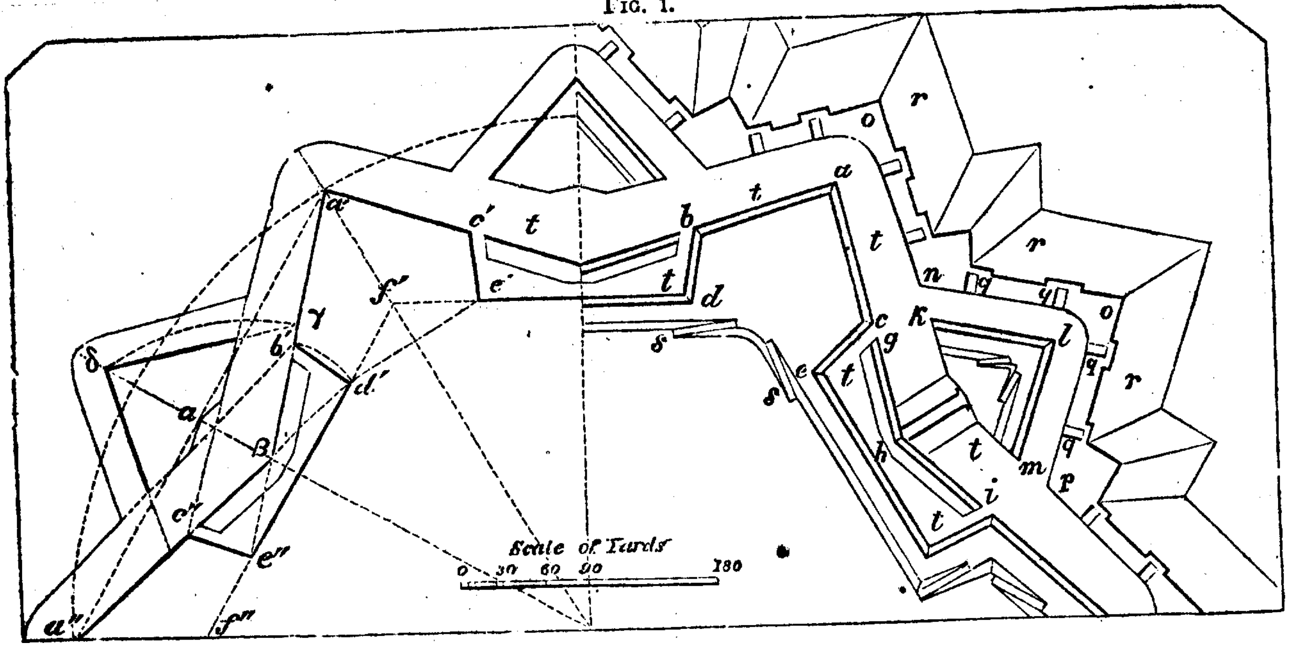
COEHORN, or COHORN, MENNO VAN, baron, a Dutch general and engineer, born in Friesland in 1641, died at the Hague, May 17, 1704. At the age of 16 he received a captain's commission, distinguished himself at the siege of Maestricht, and afterward at the battles of Senef, Cassel, St. Denis, and Fleurus. During the intervals of active duty he devoted much attention to the subject of fortification, with the view of equalizing the chances between besiegers and besieged, the new system of his contemporary Vauban having given great advantages to the latter. While comparatively a young man he gained a name as an engineer, and by the time he had reached middle life was recognized as the best officer of that arm in the Dutch service. The prince of Orange promised him a colonelcy, but being rather remiss in fulfilling the pledge, he retired in disgust with the intention of offering his services to the French. His wife and 8 children, however, were arrested by the order of the prince as hostages for his return, which quickly brought him back, whereon he received the promised rank, and was afterward appointed, successively, as general of artillery, director-general of fortifications, and governor of Flanders. His whole life was spent in connection with the defences of the Low Countries. At the siege of Grave, in 1674, he invented and for the first time made use of the small mortars, called cohorns, for throwing grenades, and in the succeeding year elicited the applause of Vauban by successfully crossing the Meuse, and carrying a bastion which was considered as protected by the river. After the peace of Nimeguen (1678), he was employed in strengthening various already strong places; Nimeguen, Breda, Mannheim, since dismantled, and Bergen-op-Zoom attest the value of his system. The last-named place he considered his masterpiece, although it was taken after a long siege in 1747, by Marshal de Lowendal. During the campaigns from 1683 to 1691, he was in active service. The siege of Namur, in 1692, gave him an opportunity to test his system against that of Vauban, for these two great engineers were there opposed to each other, Coehorn in defending a work which he had constructed to protect the citadel, and Vauban in attempting to reduce it. Coehorn made an obstinate defence, but being dangerously wounded, was compelled to surrender to his rival, who handsomely acknowledged his bravery and skill. He was afterward engaged at the attack on Trarbach, Limburg, and Liége, and in 1695 aided in retaking Namur. In the war of the Spanish succession he besieged successively Venloo, Stephensworth, Ruremonde, Liége, and in 1703 took Bonn, on the Rhine, after 8 days' cannonade of heavy artillery aided by a fire of grenades from 500 cohorns. Next he passed into Dutch Flanders, where he gained several successes over the French, and directed the siege of Huy. This was his last service, for he died soon afterward of apoplexy, while waiting a conference with the duke of Marlborough on the plan of a new campaign. Coehorn's greatest work, *Nieuwe Vestingbouw*, was published at Leeuwarden, in folio, 1685, and translated into several foreign languages. His plans are mostly adapted to the Dutch fortresses, or to those which are similarly situated on ground but a few feet above water level. Wherever it was practicable, he encircled his works with two ditches, the outermost full of water; the inner dry, and usually of the width of about 125 feet, serving as a *place d'armes* for the besieged, and in some cases for detachments of cavalry. The theory of his system, both of attack and defence, was the superiority of a combined mass over isolated fire. Professionally, Coehorn was accused of wasteful expenditure of life, in which respect he contrasted unfavorably with Vauban, who was sparing of men.

Personally, he was blunt, honest, brave, and a hater of adulation. He refused inducements offered by several foreign governments. Charles II. of England knighted him. He was buried at Wijkel, near Sneek, in Friesland, and a monument was dedicated there to his memory.

Fortification

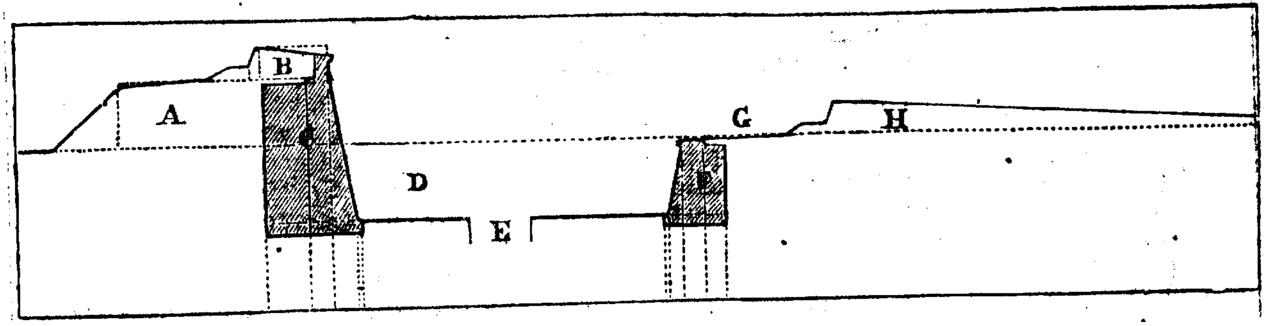
FORTIFICATION. This subject is sometimes divided into defensive fortification, which provides the means of rendering a given locality, permanently or for a short time only, capable of defence; and offensive fortification, which contains the rules for conducting a siege. We shall, however, treat of it here under the three heads of Permanent Fortification, or the mode of putting a locality, in time of peace, in such a state of defence as to compel the enemy to attack it by a regular siege; the art of Sieges; and Field Fortification, or the construction of temporary works to strengthen a given point in consequence of the momentary importance which it may acquire under the peculiar circumstances of a campaign. I. Permanent Fortification. The oldest form of fortification appears to be the stockade, which up to the end of the 18th century was still the national system with the Turks (*palanka*), and is even now in full use in the Indo-Chinese peninsula among the Burmese. It consists of a double or triple row of stout trees, planted upright and near each other in the ground, forming a wall all around the town or camp to be defended. Darius in his expedition among the Scythians, Cortes at Tabasco in Mexico, and Capt. Cook in New Zealand, all came in contact with such stockades. Sometimes the space between the rows of trees was filled up with earth; in other instances the trees were connected and held together by wicker work. The next step was the erection of masonry walls instead of stockades. This plan secured greater durability, at the same time that it rendered the assault far more difficult; and from the days of Nineveh and Babylon down to the close of the middle ages, masonry walls formed the exclusive means of fortification among all the more civilized nations. The walls were made so high that escalade was rendered difficult; they were made thick enough to offer a lengthened resistance to the battering ram, and to allow the defenders to move about freely on the top, sheltered by a thinner masonry parapet with battlements, through the embrasures of which arrows and other missiles might be shot or thrown against the assailants. To increase the defence, the parapet was soon built overhanging, with holes between the projecting stones on which it rested, so as to allow the besieged to see the foot of the wall and reach an enemy who might have got so far by direct missiles from above. The ditch, no doubt, was also introduced at an early period, surrounding the whole wall, and serving as the chief obstacle against access to it. Finally, the defensive capabilities of masonry walls were developed to the highest point by adding at intervals towers which projected from the wall, thus giving it a flanking defence by missiles thrown from them at such troops as assailed the space between two towers. Being in most cases higher than the wall, and separated from its top by cross parapets, they commanded it and formed each a small fortress, which had to be taken singly after the defenders had been driven from the main wall itself. If we add to this, that in some cities, especially in Greece, there was a kind of citadel, on some commanding height inside the walls (acropolis), forming a reduit and second line of defence, we shall have indicated the most essential points of the fortification of the masonry epoch.—But from the 14th to the end of the 16th century the introduction of artillery fundamentally changed the modes of attacking fortified places. From this period dates that immense literature on fortification which has produced systems and methods innumerable, part of which have found a more or less extensive practical application, while others, and not always the least ingenious, have been passed over as merely theoretical curiosities, until at later periods the fruitful ideas contained in them have been again drawn into daylight by more fortunate successors. This has been the fate, as we shall see, of the very author who forms, if we may say so, the bridge between the old masonry system and the new system of earthworks merely revetted with masonry in those places which the enemy cannot see from a distance. The first effect of the introduction of artillery was an increase in the thickness of the walls and in the diameter of the towers at the expense of their height. These towers were now called roundels (*rondelli*), and were made large enough to hold several pieces of cannon. To enable the besieged to work cannon on the wall too, a rampart of earth was thrown up behind it so as to give it the necessary width. We shall soon see how this earthwork gradually encroached on the wall, so as in some cases to supersede it altogether. Albert Dürer, the celebrated German painter developed this system of roundels to its highest perfection. He made them perfectly independent forts, intersecting the continuity of the wall at certain intervals, and with casemated batteries enfilading the ditch; of his masonry parapets, not more than 3 feet high is uncovered (visible to the besieger and subject to his direct fire); and in order to complete the defence of the ditch, he proposed *caponnières*, casemated works on the sole of the ditch, hidden from the eyes of the besiegers, with embrasures on either side so as to enfilade the ditch as far as the next angle of the polygon. Almost all these proposals were new inventions; and if none except the casemates found favor with his age, we shall see that in the latest and most important systems of fortification they have all been adopted and developed according to the altered circumstances of modern times.—About the same time, a change was adopted in the shape of the enlarged towers, from which modern systems of fortification may be considered to date. The round shape had the disadvantage that neither the curtain (the piece of wall between two towers) nor the next adjoining towers could reach with their fire every point in front of an intermediate tower; there were small angles close to the wall, where the enemy, if he once reached them, could not be touched by the fire of the fortress. To avoid this, the tower was changed into an irregular pentagon, with one side turned toward the interior of the fortress, and 4 toward the open country. This pentagon was called a bastion. To prevent repetitions and obscurity, we shall now at once proceed to give the description and nomenclature of bastionary defence, based on one of those systems which show all its essential particulars. Fig. 1 (see next page) represents 3 fronts of a hexagon fortified according to Vauban's first system. The left side represents the mere outline as used in the geometrical delineation of the work; the right gives the ramparts, glacis, &c., in detail. The entire side of the polygon *f' f''* is not formed by a continuous rampart; at each end, the portions *d' f'* and *e'' f''* are left open, and the space thus arising is closed by the projecting pentagonal bastion *d' b' a' c' e'*. The lines *a' b'* and *a' c'* form the faces, the lines *b' d'* and *c' e'* the flanks of the bastion. The points where faces and flanks meet are called the shoulder points. The line *a' f'*, which goes from the centre of the circle to the point of the bastion, is called the capital. The line *e'' d'*, forming part of the original circumference of the hexagon, is the curtain. Thus every polygon will have as many bastions as sides. The bastion may be either full, if the whole pentagon is filled up with earth as high as the *terreplein* of the rampart (the place where the guns stand), or hollow (empty) if the rampart slopes down, immediately behind the guns, into the interior. In fig. 1, *d b a c e* is a full bastion; the next one to the right, of which one half only is seen, is a hollow one. Bastions and curtains together constitute the enceinte, or body of the place. In them we notice, on the terreplein, first the parapet, constructed in front so as to shelter the defenders, and then the ramps, on the interior slope (*s s*), by which the communications with the interior are kept up. The rampart is high enough to cover the houses of the town from direct fire, and the parapet thick enough to offer lengthened resistance to heavy artillery. All round the rampart is the ditch *t t t t*, and in it are several classes of outworks. First, the ravelin or demilune *k l m*, in front of the curtain, a triangular work with two faces, *k l* and *l m*, each with a rampart and parapet to receive artillery. The open rear of any work is called the gorge; thus in the ravelin, *k m*,

FIG. 1.



in the bastion *d e*, is the gorge. The parapet of the ravelin is about 3 or 4 feet longer than the parapet of the body of the place, so that it is commanded by it, and the guns of the latter may in case of need fire away over it. Between the curtain and ravelin there is a long and narrow detached work in the ditch, the *tenaille*, *g h i*, destined principally to cover the curtains from breaching fire; it is low and too narrow for artillery, and its parapet merely serves for infantry to flank the ditch fire into the lunette in case of a successful assault. Beyond the ditch is the covered way, *n o p*, bounded on the inner side by the ditch and on the outer side by the interior slope of the glacis, *r r r*, which from its highest inner boundary line or crest (*crête*) slopes very gradually down into the field. The crest of the glacis is again 3 feet or more lower than the ravelin, so as to allow all the guns of the fortress to fire over it. Of the slopes in these earthworks the exterior one of the body of the place and of the outworks in the ditch (scarp), and the exterior one of the ditch (from the covered way downward) or counterscarp, are generally revetted with masonry. The salient and reëntering angles of the covered way form large, roomy, sheltered spots, called places of arms; they are called either salient (*o*) or reëntering (*n p*), according to the angles at which they are situated. To prevent the covered way from being enfiladed, traverses or cross parapets are constructed across it at intervals, leaving only small passages at the end nearest the glacis. Sometimes there is a small work constructed to cover the communication across the ditch from the tenaille to the ravelin; it is called a *caponnière*, and consists of a narrow pathway covered on either side by a parapet, the exterior surfaces of which slope down gradually like a glacis. There is such a caponnière between the tenaille *g h i* and the ravelin *k l m*, fig. 1.—The section given in fig. 2 will assist in rendering this description clearer. A is the terreplein of the body of the place, B is the parapet, C the masonry revetment of the scarp, D the ditch, E the *cunette*, a smaller and deeper ditch drawn across the middle of the larger one, F the masonry revetment of the counterscarp, G the covered way, H the glacis. The steps shown behind the parapet and glacis are called banquettes, and serve as stands for infantry to step on and fire over the protecting parapet. It will be readily observed from the diagram that the guns placed on the flanks of the bastions sweep the whole ditch in front of the adjoining bastions. Thus the face *a′ b′* is covered by the fire of the flank *c″ e″*, and the face *a′ c′* by the flank *b d*. On the other hand, the inner faces of two adjoining bastions cover the faces of the ravelin between them, by keeping the ditch in front of the ravelin under their fire. Thus there is no portion of the ditch unprotected by a flanking fire; in this consists the original and great step in advance by which the bastionary system inaugurates a new epoch in the history of fortification.—The inventor of bastions is not known, nor is the precise date at which they were introduced; the only thing certain is that they were invented in Italy, and that San Michele in 1527 constructed two bastions in the rampart of Verona. All statements respecting earlier bastions are doubtful. The systems of bastionary fortification are classed under several national schools; the first to be mentioned is of course that which invented bastions, the Italian. The first Italian bastions bore the stamp of their origin; they were nothing but polygonal towers or roundels; they scarcely altered the former character of the fortification, except as regarded the flanking fire. The enceinte remained a masonry wall, exposed to the direct fire of the enemy; the rampart of earth thrown up behind served chiefly to give room to place and handle artillery, and its inner slope was also revetted with masonry, as in the old town walls. It was not till a later day that the parapet was constructed of earthworks, but even then the whole of its outer slope up to the top was revetted with masonry exposed to the direct fire of the enemy. The curtains were very long, from 300 to 550 yards. The bastions were very small, the size of large roundels, the flanks always perpendicular to the curtains. Now as it is a rule in fortification that the best flanking fire always comes from a line perpendicular to the line to be flanked, it is evident that the chief object of the old Italian flank was to cover, not the short and distant face of the adjoining

FIG. 2.



bastion, but the long straight line of the curtain. Where the curtain became too long, a flat, obtuse-angled bastion was constructed on the middle of it, and called a platform (*piata forma*). The flanks were not constructed on the shoulder point, but a little retired behind the rampart of the faces, so that the shoulder points projected and were supposed to shelter them; and each flank had two batteries, a lower one, and a higher one a little to the rear; sometimes even a casemate in the scarp wall of the flank on the bottom of the ditch. Add to this a ditch, and you have the whole of the original Italian system; there were no ravelins, no tenailles, no covered way, no glacis. But this system was soon improved. The curtains were shortened, the bastions were enlarged. The length of the inner side of the polygon ($f\,f'$, fig. 1) was fixed at from 250 to 300 yards. The flanks were made longer, $\frac{1}{6}$ of the side of the polygon, $\frac{1}{4}$ of the length of the curtain. Thus, though they remained perpendicular to the curtain and had other defects, as we shall see, they now began to give more protection to the face of the next bastion. The bastions were made full, and in their centre a cavalier was often erected, that is, a work with faces and flanks parallel to those of the bastion, but with a rampart and parapet so much higher as to admit of its firing over the parapet of the bastion. The ditch was very wide and deep, the counterscarp running generally parallel to the face of the bastion; but as this direction of the counterscarp prevented the part of the flank nearest the shoulder from seeing and flanking the whole of the ditch, it was subsequently done away with, and the counterscarp was traced so that its prolongation passed through the shoulder point of the next bastion. The covered way was then introduced (first in the citadel of Milan, in the 2d quarter of the 16th century, first described by Tartaglia in 1554). It served as a place of concentration as well as of retreat for sallying parties, and from its introduction the scientific and energetic use of offensive movements in the defence of fortresses may be said to date; to increase its utility the places of arms were introduced, which give more room, and of which the reëntering angles also give a capital flanking fire to the covered way. To render the access to the covered way still more difficult, rows of palisades were erected on the glacis, one or two yards from its crest, but in this position they were soon destroyed by the enemy's fire; after the middle of the 17th century, therefore, they were placed, at the suggestion of the Frenchman Maudin, on the covered way, covered by the glacis. The gates were in the middle of the curtain; to cover them, a crescent-shaped work was placed in the middle of the ditch in front of them; but for the same reason that the towers were transformed into bastions, the half-moon (*demi-lune*) was soon changed into a triangular work—the present ravelin. This was still very small, but became larger when it was found that not only did it serve as a bridge-head across the ditch, but also covered flanks and curtains against the enemy's fire, gave a cross fire in front of the capitals of the bastions, and effectually flanked the covered way. Still they were made very small, so that the prolongation of their faces reached the body of the place in the curtain point (the extremity of the curtain). The principal faults of the Italian mode of fortification were the following: 1. The bad direction of the flank. After the introduction of ravelins and covered ways, the curtain became less and less the point of attack; the faces of the bastions now were chiefly assailed. To cover these well, the prolongation of the faces should have met the curtain at the very point where the flank of the next bastion was erected, and this flank should have been perpendicular or nearly so to this prolonged line (called the line of defence). In that case there would have been an effective flanking fire all along the ditch and front of the bastion. As it was, the line of defence was neither perpendicular to the flanks nor did it join the curtain at the curtain point; it intersected the curtain at $\frac{1}{4}$, $\frac{1}{3}$, or $\frac{1}{2}$ of its length. Thus, the direct fire of the flank was more likely to injure the garrison of the opposite flank than the assailants of the next bastion. 2. There was an evident want of provision for a prolonged defence after the enceinte had been breached and successfully assaulted at one single point. 3. The small ravelins but imperfectly covered the curtains and flanks, and received but a poor flanking fire from them. 4. The great elevation of the rampart, which was all faced or revetted with masonry, exposed, in most cases, a height of 15 to 20 feet of masonry to the direct fire of the enemy, and of course this masonry was soon destroyed. We shall find that it took almost two centuries to eradicate this prejudice in favor of uncovered masonry, even after the Netherlands had proved its uselessness. The best engineers and authors belonging to the Italian school were: San Michele (died 1559), fortified Napoli di Romania in Greece, and Candia, and built Fort Lido near Venice; Tartaglia (about 1550); Alghisi da Carpi, Girolamo Maggi, and Giacomo Castriotto, who about the end of the 16th century all wrote on fortification. Paciotto of Urbino built the citadels of Turin and Antwerp (1560–'70). The later Italian authors on fortification, Marchi, Busca, Floriani, Rosetti, introduced many improvements, but none of these were original. They were mere plagiarists of more or less skill; they copied most of their devices from the German Daniel Speckle, and the remainder from the Netherlanders. They all belong to the 17th century, and were completely eclipsed by the rapid development of fortificatory science which at that time took place in Germany, the Netherlands, and France.—The defects of the Italian system of fortification were soon discovered in Germany. The first man to point out the chief defect of the elder Italian school, the small bastions and long curtains, was a German engineer, Franz, who fortified for Charles V. the town of Antwerp. In the council held to try the plan, he insisted upon larger bastions and shorter curtains, but was outvoted by the duke of Alva and the other Spanish generals, who believed in nothing but the routine of the old Italian system. Other German fortresses were distinguished by the adoption of casemated galleries upon the principle of Dürer, as Küstrin, fortified in 1537–'58, and Jülich, fortified a few years later by an engineer known under the name of Master John (*Meister Johann*). But the man who first broke completely through the fetters of the Italian school and laid down the principles on which the whole of the subsequent systems of bastionary fortification are founded, was Daniel Speckle, engineer to the town of Strasbourg (died 1589). His chief principles were: 1. That a fortress becomes stronger the more sides there are to the polygon which forms the enceinte, the different fronts being thereby enabled to give a better support to each other; consequently, the nearer the outline to be defended comes to a straight line, the better. This principle, demonstrated as an original discovery with a great show of mathematical learning by Cormontaigne, was thus very well known to Speckle 150 years earlier. 2. Acute-angled bastions are bad; so are obtuse-angled; the salient angle should be a right one. Though correct in his opposition to acute salients (the smallest admissible salient angle is now generally fixed at 60°), the partiality of his time for right-angled salients made him hostile to the obtuse salient, which is indeed very advantageous and unavoidable in polygons with many sides. In fact, this appears to have been merely a concession to the prejudices of his time, for the diagrams of what he considers his strongest method of fortification all have obtuse-angled bastions. 3. The Italian bastions are far too small; a bastion must be large. Consequently, Speckle's bastions are larger than those of Cormontaigne. 4. Cavaliers are necessary in every bastion and on every curtain. This was a consequence of the system of siege of his time, in which high cavaliers in the trenches played a great part. But in Speckle's intention, the cavaliers were to do more than resist these; they are real *coupures* provided beforehand in the bastion, forming a second line of defence after the enceinte has been breached and stormed. The whole of the credit generally given to Vauban and Cormontaigne for cavaliers forming permanent coupures, is therefore in reality due to Speckle. 5. A portion, at least, of the flank, and better still the whole of the flank of a bastion, must be perpendicular to the line of defence, and the flank be erected in the point where the line of defence crosses the curtain. This important principle, the alleged discovery of which forms the greater part of the glory of the French engineer Pagan, was thus publicly proclaimed 70 years before Pagan. 6. Casemated galleries are necessary for the defence of the ditch; consequently Speckle has them both on the faces and flanks of the bastion, but only for infantry; if he had made them large enough for artillery, he would in this respect have been fully up to the latest improvements. 7. To be useful, the ravelin must be as large as possible; accordingly, Speckle's ravelin is the largest ever proposed. Now, Vauban's improvements upon Pagan consist partly, and Cormontaigne's improvements upon Vauban consist almost entirely, in the successive enlargement of the ravelin; but Speckle's ravelin is a good deal larger than even Cormontaigne's. 8. The covered way is to be strengthened as much as possible. Speckle was the first to see the immense importance of the covered way, and he strengthened it accordingly. The crests of the glacis and of the counterscarp were formed *en crémaillère* (like the edge of a saw), so as to render enfilading fire ineffective. Cormontaigne, again, took up this idea of Speckle's; but he retained the traverses (short ramparts across the covered way against enfilading fire), which Speckle rejected. Modern engineers have generally come to the conclusion that Speckle's plan is better than Cormontaigne's. Speckle, beside, was the first to place artillery on the places of arms of the covered way. 9. No piece of masonry is to be exposed to the eye and direct fire of the enemy, so that his breaching batteries cannot be established before he has arrived on the crest of the glacis. This most important principle, though established by Speckle in the 16th century, was not generally adopted until Cormontaigne; even Vauban exposés a good deal of his masonry. (See C, fig. 2.) In this short abstract of Speckle's ideas the fundamental principles of all modern bastionary fortification are not only contained but plainly stated, and his system, which even now would afford very good defensive works, is truly wonderful considering the time in which he lived. There is not a celebrated engineer in the whole history of modern fortification who cannot be proved to have copied some of his best ideas from this great original source of bastionary defence. Speckle's practical engineering skill was shown in the construction of the fortresses of Ingolstadt, Schlettstadt, Hagenau, Ulm, Colmar, Basel, and Strasbourg, all of which were fortified under his direction.—About the same epoch, the struggle for the independence of the Netherlands gave rise to another school of fortification. The Dutch towns, whose old masonry walls could not be expected to resist a regular attack, had to be fortified against the Spaniards; there was, however, neither time nor money for the erection of the high masonry bastions and cavaliers of the Italian system. But the nature of the ground offered other resources in its low elevation above the water horizon, and consequently the Dutch, expert in canal and dike building, trusted to the water for their defence. Their system was the exact counterpart of the Italian: wide and shallow wet ditches, from 14 to 40 yards across; low ramparts without any masonry revetment, but covered by a still lower advanced rampart (*fausse-braie*) for the stronger defence of the ditch; numerous outworks in the ditch, such as ravelins, half moons (ravelins in front of the salient of the bastion), horn and crown works;* and finally, a better use of the accidents of the ground than with the Italians. The first town fortified entirely by earthworks and wet ditches was Breda (1533). Subsequently the Dutch method received several improvements: a narrow zone of the scarp was revetted with masonry, as the wet ditches, when frozen over in winter, were easily passed by the enemy; locks and sluices were constructed in the ditch, so as to let the water in at the moment when the enemy had begun to sap the hitherto dry bottom; and finally, sluices and dikes were constructed for a systematic inundation of the country around the foot of the glacis. The writers on this elder Dutch method of fortification are Marolois (1627), Freitag (1630), Völker (1666), Melder (1670). An application of Speckle's maxims to the Dutch method was attempted by Scheither, Neubauer, Heidemann, and Heer (all from 1670 to 1690, and all of them Germans).—Of all the different schools of fortification, the French has enjoyed the greatest popularity; its maxims have found practical application in a greater number of still existing fortresses than those of all the other schools put together. Still, there is no school so poor in original ideas. There is neither a new work nor a new principle in the whole of the French school which is not borrowed from the Italians, the Dutch, or the Germans. But the great merit of the French is the reduction of the art to precise mathematical rules, the symmetrical arrangement of the proportions of the different lines, and the adaptation of the scientific theory to the varied conditions given by the locality to be fortified. Errard of Bar-le-Duc (1594), commonly called the father of French fortification, has no claim to the appellation; his flanks form an acute angle with the curtain, so as to be still more ineffective than those of the Italians. A more important name is Pagan (1645). He was the first to introduce in France, and to popularize, Speckle's principle that the flanks should be perpendicular to the lines of defence. His bastions are roomy; the proportions between the lengths of faces, flanks, and curtains are very good; the lines of defence are never longer than 240 yards, so that the whole of the ditch, but not the covered way, is within musket range from the flanks. His ravelin is larger than that of the Italians, and has a *reduit* or keep in its gorge, so as to admit of resistance when its rampart has already been taken. He covers the faces of the bastions with a narrow detached work in the ditch, called a counter-guard, a work which had already been used by the Dutch (the German Dillich appears to have first introduced it). His bastions have a double rampart on the faces, the second to serve as a coupure; but the ditch between the two ramparts is entirely without flanking fire. The man who made the French school the first in Europe was Vauban (1633–1707), marshal of France. Although his real military glory rests upon his two great inventions in the attack of fortresses (ricochet fire and parallels), still he is popularly better known as a constructor of them. What we have said of the French school is true of Vauban's method in the highest degree. We see in his constructions as great a variety of forms as is compatible with the bastionary system; but there is nothing original among them, much less any attempt to adopt other forms than the bastionary. But the arrangement of the details, the proportions of the lines, the profiles, and the adaptation of the theory to the ever-varying requirements of the locality, are so ingenious, that they appear perfection in comparison to the works of his predecessors, so that scientific and systematic fortification may be said to date from him. Vauban, however, did not write a line on his method of fortification, but from the great number of fortresses constructed by him the French engineers have tried to deduce the theoretical rules he followed, and thus have been established 3 methods, called Vauban's first, second, and third system. Fig. 1 gives the first system in its greatest simplicity. The chief dimensions were: the outer side of the polygon, from the point of one bastion to that of the next, 300 yards (on an average); on the middle of this line, a perpendicular $\alpha\ \beta$, $\frac{1}{6}$ of the first; through β, the lines of defence from a'' and a', $a''\ d'$, and $a'\ e''$. From the points a'' and a', $\frac{2}{7}$ of $a''\ a'$ measured on the lines of defence gives the faces $a''\ c''$ and $a'\ b'$. From the shoulder points c'' and b' arcs with the radius $c''\ d'$ or $b'\ e''$ were drawn between the lines of defence, giving the flanks $b'\ d'$ and $c''\ e''$. Draw $e''\ d'$, the curtain. The ditch: with radius 30 yards, an arc in front of the point of the bastion, prolonged by tangents drawn to this arc from the shoulder points of the adjoining bastions, gives the counterscarp. The ravelin: from the curtain point e'', with radius $e''\ \gamma$ (γ, a point on the opposite face 11 yards beyond the shoulder-point), draw the arc $\gamma\ \delta$, until it crosses the prolongation of the perpendicular $\alpha\ \beta$; this gives the point of the ravelin; the chord to the arc just described gives the face, which is continued from the point until it reaches the prolongation of the tangent forming the counterscarp of the main ditch; the gorge of the ravelin is fixed by this line equally, so that the whole of the ditch remains free for the fire of the flanks. In front of the curtain, and there alone, Vauban retained the Dutch *fausse-braie;* this had already been done by the Italian Floriani before him, and the new work had been called *tenaille* (*tenaglia*). Its faces were in the direction of the lines of defence. The ditch in front of the ravelin was 24 yards wide, the counterscarp parallel to the faces of the ravelin, and the point rounded off. In this manner Vauban obtained roomy bastions, and kept his flanked salient angles well within musket range; but the simplicity of these bastions renders the defence of the place impossible as soon as the face of one bastion is breached. His flanks are not so good as Speckle's or Pagan's, forming an acute angle with the lines of defence; but he does away with the 2 and 3 tiers of uncovered guns which figure in most of the Italian and early French flanks, and which were never very useful. The tenaille is intended to strengthen the defence of the ditch by infantry fire, and to cover the curtain from direct breaching fire from the crest of the glacis; but this is very imperfectly done, as the breaching batteries in the reëntering place of arms (*n*, fig. 1) have a full view of the piece of the curtain next to the flank at *e*. This is a great weakness, as a breach there would turn all the coupures prepared in the bastion as a second line of defence. It arises from the ravelin being still too small. The covered way, constructed without crémaillères, but with traverses, is much inferior to Speckle's; the traverses prevent not only the enemy, but also the defence, from enfilading the covered way. The communications between the different works are on the whole good, but still not sufficient for energetic sallies. The profiles are of a degree of strength which is still generally adopted. But Vauban still clung to the system of revetting the whole of the outside of the rampart with masonry, so that at least 15 feet high of masonry was uncovered. This mistake is made in many of Vauban's fortresses, and once made can only be remedied at an enormous expense by widening the ditch in front of the faces of the bastions, and constructing earthwork counterguards to cover the masonry. During the greater part of his life Vauban followed his first method; but after 1680 he introduced two other methods, having for their object to admit of a prolonged defence after the bastion was breached. For this purpose he took up an idea of Castriotto's, who had proposed to modernize the old tower and wall fortification by placing detached bastions, isolated, in the ditch, in front of the towers. Both Vauban's second and third methods agree in this. The ravelin is also made larger, the masonry is a little better covered; the towers are casemated, but badly; the fault that the curtain may be breached between bastion and tenaille is maintained, and renders the detached bastion partly illusory. Still, Vauban considered his second and third methods as very strong. When he handed over to Louis XIV. the plan for the fortification of Landau (second system), he said: "Sire, here is a place that all my art would not suffice to take." This did not prevent Landau from being taken 3 times during Vauban's life (1702, 1703, 1704), and again shortly after his death (1713).—The errors of Vauban were rectified by Cormontaigne, whose method may be considered as the perfection of the bastionary system. Cormontaigne (1696–1752) was a general of engineers. His larger bastions permit the construction of permanent coupures and second lines of defence; his ravelins were nearly as large as those of Speckle, and fully covered that portion of the curtain which Vauban had left exposed. In polygons of 8 and more sides his ravelins were so far advanced that their fire took in the rear the besiegers' works against the next bastion as soon as he reached the crest of the glacis. In order to avoid this, two ravelins have to be conquered before one bastion can be breached. This mutual support of the large ravelins becomes more and more effective the more the line to be defended approaches a straight one. The reëntering place of arms was strengthened by a reduit. The crest of the glacis is drawn *en crémaillère*, as with Speckle, but traverses are maintained. The profiles are very good, and the masonry is always covered by the earthworks in front. With Cormontaigne the French school closes, as far as the construction of bastionary defences, with outworks within the ditch, is concerned. A comparison of the gradual development of bastionary fortification from 1600 to 1750, and of its final results as laid down by Cormontaigne, with the principles of Speckle, as stated above, will tend to elucidate the wonderful genius of the German engineer; for although outworks in the ditch have been multiplied to an enormous degree, yet not a single important principle has been discovered during all these 150 years which had not been already clearly and distinctly enunciated by Speckle.—After Cormontaigne, the school of engineers of Mézières (about 1760) made some slight alterations in his system, the principal of which is the return to Speckle's old rule that the flanks must be perpendicular to the lines of defence. But the principal point for which the school of Mézières is remarkable is that they for the first time construct outworks beyond the covered way. On fronts particularly open to attack they place at the foot of the glacis, on the capital of the bastion, a detached ravelin called a lunette, and thereby approach for the first time to the modern system of permanent intrenched camps. In the beginning of the 19th century Bousmard, a French emigrant who served in Prussia and was killed at Dantzic in 1806, tried still to improve upon Cormontaigne; his ideas are rather complicated, and the most remarkable is that his ravelin, which is very large, is advanced to the foot of the glacis almost so as to take the place and functions, to a certain degree, of the lunette just described.—A Dutch engineer of Vauban's time, who more than once opposed him in siege warfare with equal honor, Baron Coehorn, gave a further development to the old Dutch method of fortification. His system gives a stronger defence even than Cormontaigne's, by the clever combination of wet and dry ditches, the great facilities offered to sorties, the excellent communications between the works, and the ingenious reduits and coupures in his ravelins and bastions. Coehorn, a great admirer of Speckle, is the only engineer of note who was honest enough to acknowledge how much he owed to him.—We have seen that even before the introduction of bastions, Albert Dürer used caponnières to afford a stronger flanking fire. In his fortified square he even entirely trusts to these caponnières for the defence of the ditch; there are no towers on the corner of the fort; it is a plain square with none but salient angles. To make the enceinte of a polygon entirely coincident with its outline, so as to have all salient and no reëntering angles, and to flank the ditch by caponnières, constitutes what is called polygonal fortification, and Dürer must be considered as its father. On the other hand, a star-shaped enceinte, in which salient and reëntering angles follow upon each other regularly, and in which each line is both flank and face at once, flanking the ditch of the next line with the portion next to the reëntering angle, and commanding the field with the portion next the salient—such an outline constitutes tenaille fortification. The older Italians and several of the older Germans had proposed this form, but it was not developed till afterward. The system of George Rimpler (engineer to the emperor of Germany, killed in defending Vienna against the Turks in 1683) forms a kind of intermediate stage between the bastionary and tenaille system. What he calls intermediate bastions constitute in reality a perfect line of tenailles. He declared himself energetically against open batteries with a mere earth parapet in front, and insisted on casemated batteries wherever they could be erected; especially on the flanks, where 2 or 3 tiers of well covered guns would thus have a far greater effect than the 2 or 3 tiers of guns in open flank batteries, which could never act together. He also insisted on batteries, that is, *reduits*, in the places of arms of the covered way, which Coehorn and Cormontaigne adopted, and especially a double and triple line of defence behind the salient angles of the enceinte. In this manner his system is remarkably in advance of his time; the whole of his enceinte consists of independent forts, each of which has to be taken separately, and large defensive casemates are used in a manner which reminds us, almost in the details even of their application, of the more recent constructions in Germany. There is no doubt that Montalembert owed as much to Rimpler as the bastionary system of the 17th and 18th century to Speckle. The author who first fully developed the advantages of the tenaille over the bastionary system was Landsberg (1712); but it would lead us too far if we were to enter into his arguments or describe his fortificatory outline. Of the long series of skilful German engineers who followed Rimpler and Landsberg, we may name the Mecklenburg colonel Buggenhagen (1720), the inventor of blockhouse traverses, or traverses hollowed out and adapted for casemated musketry fire; and the Würtemberg major Herbort (1734), inventor of defensive barracks, large barracks in the gorge of salient works, proof against vertical fire, with embrasured casemates on the side facing the enceinte, and barracks and store rooms on the side facing the town. Both these constructions are now very largely used.—Thus we see that the German school, with almost the only exception of Speckle, was from its origin adverse to bastions, which it sought to replace chiefly by tenailles, and that it attempted at the same time to introduce a better system of inner defence, chiefly by the use of casemated galleries, which again were considered as the height of absurdity by French engineering authorities. One of the greatest engineers, however, that France ever produced, the marquis de Montalembert (1713–'99), major-general of cavalry, passed over with drums beating and colors flying into the camp of the German school, to the great horror of the whole French engineering corps, who, up to the present date, decry every word he has written. Montalembert severely criticized the defects of the bastionary system; the ineffectuality of its flanking fire; the almost certainty it offered to the enemy that his shots if they missed one line must do harm in another; the want of protection against vertical fire; the perfect uselessness of the curtain as to fire; the impossibility of having good and large coupures in the gorges of the bastions, proved by the fact that no fortress of his time had any of the multifarious permanent coupures proposed by the theorists of the school; and the weakness, bad connection, and want of mutual support of the outworks. Montalembert therefore preferred either the tenaille or the polygonal system. In either case the body of the place consisted of a row of casemates, with one or two tiers of guns, the masonry of which was covered from direct fire by a counterguard or *couvre-face* of earthwork extending all around and having a second ditch in its front; this ditch was flanked by casemates in the reëntering angles of the couvre-face covered by the parapet of the reduit or lunette in the reëntering place of arms. The whole system was based upon the principle of opposing, by means of casemated guns, such an overwhelming fire to the enemy the moment he reached the crest of the glacis, or of the couvre-face, that he could not possibly succeed in erecting his breaching batteries. That casemates could do this he maintained against the unanimous condemnation of French engineers, and he afterward even compiled systems of circular and tenaille fortifications in which all earthworks were rejected and the whole defence intrusted to high casemated batteries with from 4 to 5 tiers of guns, the masonry of which was to be protected by the fire of its batteries only. Thus, in his circular system, he contrives to concentrate 848 guns on any point 500 yards from the fortress, and expects that such an immense superiority of fire would put the possibility of erecting siege batteries entirely out of the question. In this, however, he has found no adherents, except in the construction of the sea fronts of coast forts; here the impossibility of breaching strong casemated walls by the guns of ships was pretty well demonstrated by the bombardment of Sebastopol. The splendid forts of Sebastopol, Cronstadt, Cherbourg, and the new batteries on the entrance of Portsmouth harbor (England), and almost all modern forts for harbor defence against fleets, are constructed according to Montalembert's principle. The partly uncovered masonry of the Maximilian towers at Lintz (Austria) and of the reduits of the detached forts of Cologne are imitated from Montalembert's less happy projects. In the fortification of steep heights (Ehrenbreitstein in Prussia, for instance) the uncovered masonry forts have also been sometimes adopted, but what resistance they will be able to make must be decided by actual experience.—The tenaille system has never, to our knowledge at least, found practical application, but the polygonal system is in great favor in Germany, and has been applied to most modern constructions there; while the French tenaciously cling to Cormontaigne's bastions. The enceinte, in the polygonal system, is generally a plain earthwork rampart with revetted scarp and counterscarp, with large caponnières in the middle of the fonts, and with large defensive barracks behind the rampart and covered by it to serve as coupures. Similar defensive barracks have also been erected as coupures in many bastionary works, to close the gorges of the bastions; the rampart serving as a counterguard to protect the masonry from distant fire. Of all Montalembert's proposals, however, that of detached forts has had the greatest success, and initiated a new era, not only in fortification, but in the attack and defence of fortresses, and even in general strategy. Montalembert proposed to surround large fortresses in important situations by a single or double chain of small forts, on commanding elevations, which, though isolated in appearance, would still support each other by their fire, and, by the facility they gave for large sorties, would render a bombardment of the place impossible, and when required form an intrenched camp for an army. Vauban had already introduced permanent intrenched camps under the guns of fortresses, but their intrenchments consisted of long continuous lines, which, if broken through at one point only, were completely at the mercy of the enemy. But these intrenched camps of Montalembert's were capable of a far greater resistance, for each fort had to be taken singly, and before 3 or 4 at least were conquered, no enemy could open his trenches against the place. Moreover, the siege of each of the forts could be interrupted at every moment by the garrison, or rather the army encamping behind the forts, and thus a combination of active campaigning and regular fortress warfare was secured, which must greatly strengthen the defence. When Napoleon led his armies hundreds of miles through the enemy's country, never heeding the fortresses which had all been constructed according to the old system, and when in return the allies (1814 and 1815) marched straight on toward Paris, leaving almost unnoticed in their rear the triple belt of fortresses with which Vauban had endowed France, it became evident that a system of fortification was antiquated which confined its outworks to the main ditch or at the outside to the foot of the glacis. Such fortresses had lost their power of attraction over the large armies of modern times. Their means of doing harm did not extend beyond the range of their cannon. It thus became necessary to find some new means to break the impetuous movement of modern invading armies, and Montalembert's detached forts were applied on a large scale. Cologne, Coblentz, Mentz, Rastadt, Ulm, Königsberg, Posen, Lintz, Peschiera, and Verona were severally transformed into large intrenched camps, capable of holding from 60,000 to 100,000 men, but defensible, in case of need, by far smaller garrisons. At the same time, the tactical advantages of the locality to be fortified were placed in the background by the strategetical considerations which now decided the situation of fortresses. Such places only were fortified as might directly or indirectly stop the progress of a victorious army, and which, being large towns in themselves, offered great advantages to an army by being the centre of the resources of whole provinces. Situations on large rivers, especially at the points of junction of two considerable rivers, were chosen in preference, as they compelled the attacking army to divide its forces. The enceinte was simplified as much as possible, and outworks in the ditch were almost entirely done away with; it was sufficient to have the enceinte safe against an irregular attack. The principal battle-field lay around the detached forts, and they were to be defended not so much by the fire from their ramparts, as by the sallies of the garrison of the fortress itself. The largest fortress constructed upon this plan is Paris; it has a simple bastioned enceinte with bastioned forts, almost all squares; there is no outwork, not even a ravelin, in the whole fortification. No doubt, the defensive strength of France has gained 30 per cent. by this new and immense intrenched camp, large enough to afford a refuge for three beaten armies. The intrinsic value of the different methods of fortification has lost a great deal of its importance by this improvement; the cheapest will now be the best; for the defence is now based, not upon the passive system of awaiting the enemy behind the walls until he opens his trenches, and then cannonading them, but upon the active one of taking the offensive with the concentrated strength of the garrison against the necessarily divided forces of the besieger. II. SIEGES. The art of sieges had been brought to a certain perfection by the Greeks and Romans. They tried to breach the walls of fortresses by the battering ram, and approached them under cover of strongly roofed galleries, or in case of need by a lofty construction which was to command walls and towers by its greater height, and offer a safe approach to the storming columns. The introduction of gunpowder did away with these contrivances; the fortresses having now ramparts of less elevation, but a fire effective at long distances, the approaches were made by trenches, leading in zigzags or curved lines toward the glacis; batteries being erected at various spots so as to silence if possible the fire of the besieged and to batter down his masonry. Once arrived on the crest of the glacis, a high trench cavalier was erected, with the intention of commanding the bastions and their cavaliers, and then by a crushing fire to complete the breach and prepare for the assault. The curtain was the point generally attacked. There was, however, no system in this mode of attack until Vauban introduced parallels of ricochet firing, and regulated the process of sieges in the manner which is in use even now, and still denominated Vauban's attack. The besieger, after investing the place with a sufficient force on all sides, and choosing the fronts to be attacked, opens the first parallel during the night (all siege works are chiefly carried on at night) at about 600 yards from the fortress. A trench parallel to the sides of the besieged polygon is drawn around at least 3 of these sides and fronts; the earth, being thrown up on the side toward the enemy and propped upon the sides of the ditch with gabions (willow-work baskets filled with earth), forms a kind of parapet against the fire of the fortress. In this first parallel the ricochet batteries for enfilading the long lines of the attacked fronts are constructed. Taking for the object of the siege a bastioned hexagon, there should be ricochet batteries to enfilade the faces of 2 bastions and 3 ravelins, in all the batteries, one for each face. These batteries throw their shot so as to pass just over the parapet of the works and along the faces in their whole length, taking them in flank and endangering guns and men. Similar batteries are constructed to enfilade the branches of the covered way, and mortars and howitzers are placed in battery to throw shells into the interior of the bastions and ravelins. All these batteries are covered by earthwork parapets. At the same time, at two or more places, zigzag trenches are pushed forward toward the place, taking care to avoid all enfilading fire from the town; and so soon as the fire of the place shows signs of slacking, the second parallel, about 350 yards from the works, is opened. In this parallel the dismounting batteries are constructed. They serve to completely destroy the artillery and embrasures on the faces of the fortress; there will be 8 faces to attack (2 bastions and their ravelins, and the inner faces of the adjoining ravelins), for each of which there is a battery, constructed parallel to the attacked faces, and each embrasure exactly opposite to an embrasure of the fortress. From the second parallel fresh zigzags are pushed toward the town; at 200 yards the half parallel is constructed, forming new enlargements of the zigzags armed with mortar batteries; and at last, at the foot of the glacis, the third parallel. This is armed with heavy mortar batteries. By this time the fire of the place will have been nearly silenced, and the approaches, in varied forms of curved or angular lines, to avoid ricochet fire, are carried up to the crest of the glacis, which it reaches opposite the points of the two bastions and of the ravelin. A lodgment or trench and parapet is then formed in the salient place of arms to enfilade the ditch by infantry fire. If the enemy is active and daring in his sorties, a 4th parallel connecting the salient places of arms across the glacis becomes necessary. Otherwise a sap is pushed from the 3d parallel to the reëntering places of arms, and the crowning of the glacis, or the construction of a trench all along the covered way on the crest of the glacis, is completed. Then the counter batteries are constructed in this *couronnement* in order to silence the fire of the flank, which enfilades the ditch, and after them the breaching batteries against the point and faces of the bastions and ravelin. Opposite the points to be breached, a mining gallery is constructed leading down from the trenches through the glacis and counterscarp into the ditch; the counterscarp is blown in, and a fresh trench constructed across the ditch to the foot of the breach, covered on the side whence the enfilading fire of the flank comes by a parapet. As soon as both breach and passage of the ditch are complete, the assault takes place. This is in the case of a dry ditch; across a wet ditch, a dike has to be constructed with fascines, covered equally by a parapet on the side of the flank of the adjoining bastion. If on taking the bastion it is found that there is a further intrenchment or coupure in the rear, a lodgment has to be effected, fresh batteries to be constructed on the breach, and a fresh breach, descent, and passage of the ditch and assault to be made. The average resistance of a bastioned hexagon of Vauban's first method against such a siege is calculated to be from 19 to 22 days if there are no coupures, and 27 or 28 days if it is provided with coupures. Cormontaigne's method is expected to hold out 25 or respectively 35 to 37 days. III. FIELD FORTIFICATION. The construction of field works is as old as the existence of armies. The ancients were even far more expert in this art than our modern armies; the Roman legions, before an enemy, intrenched their camp every night. During the 17th and 18th centuries we see also a very great use of field works, and in the wars of Frederic the Great pickets on outpost duty generally threw up slightly profiled redans. Yet even then, and it is still more the case now, the construction of field works was confined to the strengthening of a few positions selected beforehand with a view to certain eventualities during a campaign. Thus Frederic the Great's camp at Bunzelwitz, Wellington's lines at Torres Vedras, the French lines of Weissenburg, and the Austrian intrenchments in front of Verona in 1848. Under such circumstances, field works may exercise an important influence upon the issue of a campaign by enabling an inferior army successfully to resist a superior one. Formerly the intrenched lines, as in Vauban's permanently intrenched camps, were continuous; but from the defect that if pierced and taken at one point the whole line was useless, they are now universally composed of one or more lines of detached redoubts, flanking each other by their fire, and allowing the army to fall upon the enemy through the intervals as soon as the fire of the redoubts has broken the energy of his assault. This is the principal use of field works; but they are also employed singly, as bridge heads to defend the access to a bridge, or to close an important pass to small parties of the enemy. Omitting all the more fanciful shapes of works which are now out of date, such fortifications should consist of works either open or closed at the gorge. The former will either be redans (two parapets with a ditch in front forming an angle facing the enemy) or lunettes (redans with short flanks). The latter may be closed at the gorge by palisadings. The principal closed field work now in use is the square redoubt, either as a regular or an irregular quadrangle, closed by a ditch and parapet all round. The parapet is made as high as in permanent fortification (7 to 8 feet), but not so thick, having to resist field artillery only. As none of these works has a flanking fire in itself, they have to be disposed so that they flank each other within musket range. To do this effectually, and strengthen the whole line, the plan now most generally adopted is to form an intrenched camp by a line of square redoubts flanking each other, and also a line of simple redans, situated in front of the intervals of the redoubts. Such a camp was formed in front of Comorn, south of the Danube, in 1849, and was defended by the Hungarians for 2 days against a far superior army.

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* A horn work is a bastionary front, two half bastions, a curtain, and a ravelin advanced in front of the main ditch and closed on each side by a straight line of rampart and ditch, which is aligned upon the faces of the bastions of the enceinte so as to be completely flanked by their fire. A crown work consists of two such advanced fronts (one bastion flanked by two half bastions); a double crown work has three fronts. In all these works it is necessary that their rampart should be at least as much lower than that of the enceinte as the rampart of the ravelin to maintain the command of the enceinte over them. The adoption of such outworks, which of course were exceptions, was regulated by the nature of the ground.

Infantry

INFANTRY, the foot soldiers of an army. Except among nomadic tribes, the great mass, if not the entire strength of all armies has always consisted of foot soldiers. Thus even with the first Asiatic armies, with the Assyrians, Babylonians, and Persians, infantry made up, numerically at least, the main body. With the Greeks at first the whole army was composed of infantry. What little we know of the composition, organization, and tactics of ancient Asiatic infantry, has already been stated in the article ARMY, to which we refer for many details which it would be useless to repeat here. In this article, we shall restrict ourselves to the most important tactical features only in the history of the arm; we therefore at once begin with the Greeks. I. GRECIAN INFANTRY. The creators of Grecian tactics were the Dorians; among them, the Spartans brought to perfection the ancient Doric order of battle. Originally, the whole of the classes which composed a Dorian community were subjected to military service; not only the full citizens who formed the aristocracy, but also the subject *periœci*, and even the slaves. They were all formed into the same phalanx, but each in a different position. The full citizens had to appear heavily armed, with defensive armor, with helmet, cuirass, and cuissarts of brass, with a large wooden shield covered with leather, high enough to protect the whole person, and with a lance and sword. They formed, according to their numbers, the first or first and second ranks of the phalanx. Behind them stood the subjects and slaves, so that every Spartan squire had his retainers in his rear; these were without the costly defensive armor, relying on the protection afforded to them by the front ranks and their shields; their offensive weapons were slings, javelins, knives, daggers, and clubs. Thus the Doric phalanx formed a deep line, the hoplites or heavy infantry in front, the *gymnetæ* or light infantry in the rear ranks. The hoplites had to bear down the enemy by the charge of their spears; once in the midst of the hostile body, they drew their short swords, and worked their way forward at close quarters, while the gymnetæ, who first prepared the charge by throwing stones and javelins over the heads of the front ranks, now assisted the onward pressure of the hoplites by disposing of the wounded and struggling enemies. The tactics of such a body were thus very simple; tactical manœuvring there was scarcely any; the courage, tenacity, bodily strength, and individual agility and skill of the men, especially the hoplites, decided every thing. This patriarchal union of all classes of the nation in the same phalanx disappeared soon after the Persian wars, principally from political causes; the consequence was that the phalanx was now formed exclusively of hoplites, and that the light infantry, where it continued to exist, or where a new light infantry was formed, fought separately as skirmishers. In Sparta, the Spartan citizens along with the *periœci* formed the heavy armed phalanx; the helots now followed with the baggage, or as shield-bearers (*hypaspistæ*). For a while this phalanx was made to suffice for all the exigencies of battle; but soon the skirmishers of the Athenians, in the Peloponnesian war, compelled the Spartans to provide themselves with troops of a similar kind. They did not, however, form gymnetæ of their own, but sent out the younger portion of their men on skirmishing duty. When, toward the end of that war, the number of citizens and even of periœci had become greatly reduced, they were compelled to form phalanxes of heavily armed slaves, commanded by citizens. The Athenians, after banishing from the phalanx the gymnetæ, formed of the poorer citizens, of retainers and slaves, created special corps of light infantry, consisting of gymnetæ or *psiles*, destined for skirmishing, and armed exclusively for distant fighting, slingers (*sphendonetæ*), archers (*toxotæ*), and javelin-throwers (*akontistæ*), the latter also called *peltastæ* from the small shield (*pelta*) which they alone carried. This new class of light infantry, originally recruited from the poorer citizens of Athens, very soon came to be formed almost exclusively of mercenaries and the contingents of the allies of Athens. From the moment these skirmishers were introduced, the clumsy Doric phalanx was no longer fit to act alone in battle. Its materials, too, had been constantly deteriorating; in Sparta, by the gradual extinction of the warlike aristocracy; in the other towns, by the influence of commerce and wealth, which gradually undermined the ancient contempt of death. Thus, the phalanx, formed of a not very heroic militia, lost most of its old importance. It formed the background, the reserve of the line of battle, in front of which the skirmishers fought, or behind which they retired when pressed, but which scarcely ever was expected to come itself to close quarters with the enemy. Where the phalanx was formed of mercenaries, its character was not much better. Its clumsiness made it unfit for manœuvring, especially in ground but lightly broken, and its whole use was passive resistance. This led to two attempts at reform made by Iphicrates, a general of mercenaries. This Grecian *condottiere* exchanged the old, short spears of the hoplites (from 8 to 10 feet long) for considerably longer ones, so that, with closed ranks, the lances of 3 or 4 ranks projected in front and could act against the enemy; thus, the defensive element of the phalanx was considerably strengthened. On the other hand, to create a force fit for deciding battles by close yet rapid attack, he armed his peltastæ with light defensive armor and a good sword, and drilled them in the evolutions of the phalanx. When ordered to charge, they advanced at a pace unattainable by the phalanx of hoplites, gave a volley of javelins at 10 or 20 yards, and broke into the enemy with the sword. The simplicity of the ancient Doric phalanx had thus made way for a far more complicated order of battle; the action of the general had become an important element of victory; tactical manœuvres had become possible. Epaminondas was the first to discover the great tactical principle which up to the present day decides almost all pitched battles: the unequal distribution of the troops on the line of front, in order to concentrate the main attack on one decisive point. Hitherto the battles of the Greeks had been delivered in parallel order; the strength of the front line was the same on all points; if one army was superior in numbers to the one opposed to it, either it formed a deeper order of battle, or it overlapped the other army on both wings. Epaminondas, on the contrary, destined one of his wings for attack and the other for defence; the attacking wing was composed of his best troops, and of the mass of his hoplites, formed in a deep column and followed by light infantry and by the cavalry. The other wing was of course considerably weaker, and was kept back, while the attacking one broke through the enemy, and the column, either deploying or wheeling into line, rolled them up with the assistance of the light troops and horsemen.—The progress established by Iphicrates and Epaminondas was still further developed when Macedonia had taken the lead of the Hellenic race and led them against Persia. The long lances of the hoplites appear still further lengthened in the Macedonian *sarissa.* The *peltastæ* of Iphicrates appear again in an improved form in Alexander's *hypaspistæ.* Finally, the economy of forces, as applied to the order of battle by Epaminondas, was extended by Alexander to a combination of the various arms such as Greece with her insignificant cavalry could never have produced. Alexander's infantry was composed of the phalanx of hoplites, which formed the defensive strength of the order of battle; of the light skirmishing infantry, which engaged the enemy all along the front, and also contributed to the following up of the victory; and of the hypaspistæ, to which belonged his own body guard, which, though lightly equipped, were still capable of regular phalangitic manœuvring, and formed that kind of average infantry which is more or less adapted to both close and extended order. Still, neither Greece nor Macedonia had produced a movable infantry which could be relied upon when opposed to a solid phalanx. Here, Alexander brought in his cavalry. The attacking wing was formed by the mass of his heavy cavalry, chosen from the Macedonian nobility, and with them acted the hypaspistæ; they followed the charge of the horsemen, and rushed into the gap they had made, securing the success obtained by them, and establishing themselves in the midst of the enemy's position. After the conquest of the centre of the Persian empire, Alexander used his hoplites chiefly for garrisoning the conquered towns. They soon disappeared from the army which subdued by its bold and rapid marches the tribes of Asia to the Indus and Jaxartes. That army was formed chiefly of cavalry, hypaspistæ, and light infantry; the phalanx, which could not have followed on such marches, became at the same time superfluous from the nature of the enemy to be conquered. Under the successors of Alexander, his infantry, as well as his cavalry and tactics, were completely and rapidly deteriorated. The two wings of the order of battle were formed exclusively of cavalry, and the centre of infantry; but the latter was so little relied on, that it was covered by elephants. In Asia, the prevailing Asiatic element soon got the upper hand, and rendered the armies of the Seleucidæ all but worthless; in Europe, the Macedonian and Greek infantry regained some solidity, but with it came a return to the former exclusive phalangitic tactics. Light troops and cavalry never recovered, while much trouble and ingenuity were wasted in vain attempts to give to the phalanx that mobility which from its very nature it could never attain; until finally the Roman legion put an end to the whole system.—The tactical organization and manœuvres of the phalanx were simple enough. Being generally 16 deep (under Alexander), a line of 16 files formed a complete square, and this, the *syntagma*, formed the unit of evolutions; 16 syntagmas, or 256 files, formed a phalangarchy of 4,096 men, 4 of which again were to form the complete phalanx. The phalangarchy, in order of battle, formed in line 16 deep; it passed into the order of march by facing right or left, or by wheeling into syntagmas, in each case forming a close column 16 in front. When in line, the depth could be increased and front decreased by double files, the even files placing themselves behind the odd ones; and the opposite movement was performed by double ranks, reducing the depth from 16 to 8 men per file. Countermarching by files was employed when the enemy suddenly appeared in the rear of the phalanx; the inversion caused by this (every file being in a wrong place in its own section or syntagma) was sometimes set right by a countermarch by ranks in each section. Add to this the handling of the lance, and we have enumerated the various items of the drill of the ancient hoplites. It is a matter of course that the lighter troops, though not exactly destined to fight in close order, still were exercised in the phalangitic movements. **II. Roman Infantry.** The Latin word *legio* was originally used to express the totality of the men selected for field service, and thus was synonymous with army. Subsequently, when the extent of the Roman territory and the power of the enemies of the republic required larger armies, they were divided into several legions, each of which had a strength similar to that of the original Roman army. Up to the time of Marius, every legion was composed of both infantry and cavalry, the latter about $\frac{1}{16}$ of the former in strength. Originally the infantry of the Roman legion appears to have been organized similarly to the ancient Doric phalanx, fighting in a deep line, the patricians and richer citizens in heavy armor, forming the front ranks, the poorer and lighter armed plebeians behind them. But about the time of the Samnite wars the legion began to undergo a change of organization, which soon placed it in perfect contrast to the Grecian phalanx, and of which, after it had attained its full development in the Punic wars, Polybius gives us a full account. The legion, of which 4 were generally levied for each campaign, was now composed of 4 classes of infantry, *velites*, *hastati*, *principes*, and *triarii*; the first, formed from recruits, were light infantry; the triarii, from veterans, were the reserve of the army; the other two classes, forming the main fighting body or infantry of the line, composed the remainder of the army, and differed in this, that the principes were selected from those men who, after the triarii, had seen most service. The velites wore leather caps, light round shields for defensive armor, and carried swords and a number of light javelins; the remaining 3 classes had brass helmets, leather body armor covered with brass plates, and brass cuissarts. The hastati and principes, beside a short sword, carried two *pila* or javelins, a light one and a very heavy one; this latter formed the specific arm of attack of the Roman infantry. It was of thick, heavy wood, with a long iron point, weighing in all at least 10 pounds, and with the point nearly 7 feet long. It could be thrown at very short distances only, say 8 or 12 yards, but from its weight its effect was formidable to the light defensive armor of those times. The triarii, beside the sword, carried lances instead of pila. Every legion contained 1,200 hastati, divided into 10 *manipuli* or companies of 120 men each; the same number of principes, similarly divided; 600 triarii, in 10 manipuli of 60 each; and 1,200 velites, 40 of whom were attached to each of the 30 manipuli, and formed the rear ranks unless otherwise employed. The hastati formed the first line, each manipulus being deployed in line, probably 6 deep, with an interval from the next manipulus equal to its front, which, as the room allotted for every man in a rank was 6 feet, extended about 120 feet, the whole line extending 2,400 feet. Behind them, in second line, were placed the 10 manipuli of the principes, covering the intervals of the manipuli of the first line, and behind the principes the triarii, each line at an appropriate distance from the one in front of it. The velites skirmished before the front and flanks. By doubling files, the order of both could be reduced to one half its original extent of front, or 1,200 feet. The whole of this order of battle was calculated for attack. Capable, by the smallness of the tactical units and by the great liberty thereby secured to all its movements, of fighting in almost any kind of ground, it was immensely superior to the Grecian phalanx, which required a level plain, and had been very soon reduced by its own clumsiness to a mere formation for defense. The legion advanced; at 8 or 12 yards the hastati, probably doubling their ranks for the occasion, threw their heavy pila into the phalanx, whose lances could not yet reach the Romans, and, having thereby broken the closed order of the phalangites, rushed upon them sword in hand. If a single manipulus got into disorder, the effect was not transmitted to the neighboring companies; if the combat continued without immediate decision, the principes marched up into the intervals, threw their pila, and broke in upon the enemy with the sword, thus giving the hastati an opportunity of disentangling themselves and reforming behind the triarii. In an extreme case, these latter advanced, either to finally decide the victory or to secure an orderly retreat. The velites, in company with the cavalry, did outpost duty, engaged the enemy in the beginning of the battle by skirmishing, and followed up the pursuit. The light pilum of the hastati and principes appears to have been principally used in defensive positions, to create disorder in the ranks of an advancing enemy before he was close enough for the heavy pilum. Marches to the front were begun from either wing, the first manipulus of hastati in front, followed by the first respectively of principes and triarii, then the 3 second manipuli in the same order, and so forth; marches to a flank were made in 3 columns, each of the 3 classes of infantry forming a column; the baggage was on the side furthest from the enemy. If the latter appeared from the side where the triarii marched, the army halted, and faced toward the enemy, the principes and hastati passing through the intervals of the manipuli of the triarii and taking up their proper positions.—When, after the second Punic war, the continued wars and extended conquests of the Romans, combined with important social changes in Rome and Italy generally, rendered the universal liability to military service almost impracticable, the Roman armies began gradually to be composed of voluntary recruits from the poorer classes, thus forming soldiers by profession instead of the old militia in which all the citizens were included. The army hereby entirely changed its character; and, the elements from which it was composed becoming deteriorated, a new organization became more and more a necessity. Marius carried out this new organization. The Roman horse ceased to exist. What little cavalry remained was composed of barbarian mercenaries or allied contingents. The distinction of the 4 classes of infantry was done away with. The velites were replaced by allied contingents or barbarians, and the remainder of the legion formed of one and the same class of infantry of the line, armed like the hastati or principes, but without the light pilum. The manipulus was replaced, as a tactical unit, by the cohort, a body averaging 360 men, and formed originally by the fusion of 3 manipuli into one; so that the legion was now divided into 10 cohorts, which were generally disposed in 3 lines (4, 3, and 3 cohorts respectively). The cohort was formed 10 deep, with 3 to 4 feet front for each file, so that the total extent of front of the legion was very much reduced (about 1,000 feet). Thus, not only were the tactical movements much simplified, but the influence of the commander of the legion was made much more immediate and powerful. The armament and equipment of every soldier was lightened, but on the other hand he was made to carry the greater part of his baggage on wooden forks invented for the purpose by Marius (*muli Mariani*); the *impedimenta* of the army were thus considerably reduced. On the other hand, the concentration of 3 manipuli into one cohort could not but reduce the facility of manœuvring in broken ground; the absence of the light pilum reduced the capability for defence; and the abolition of the velites, not always fully replaced by foreign auxiliaries or mercenaries, or by the *antesignani* (men selected from the legion for light infantry service by Cæsar, but left without arms for distant fighting), diminished the chances of maintaining an engagement and still evading a decision. Rapid, resolute attack became the only form of combat fitted for these legions. Still the Roman infantry continued to consist of Romans, or at least Italians; and in spite of the decline of the empire under the Cæsars, it maintained its ancient renown so long as the national character was left intact. But when Roman citizenship was no longer a necessary condition for admission into a legion, the army soon lost its standing. As early as the times of Trajan, barbarians, partly from the Roman provinces, partly from unconquered countries, formed the main force of the legions, and from that moment the character of the Roman infantry was lost. The heavy armor was thrown away; the pilum was replaced by the lance; the legion, organized into cohorts, was again fused into an unwieldy phalanx; and as a general unwillingness to come to close quarters was a characteristic of the infantry of this period, the bow and javelin were now used, not for skirmishing only, but also for the closed order of infantry of the line. III. THE INFANTRY OF THE MIDDLE AGES. The decline of the Roman infantry found a continuation in that of the Byzantine foot soldiers. A kind of forced levy was still maintained, but with no other result than to form the very dregs of the army. Barbarian auxiliaries and mercenaries composed its better portions, but even these were of no great value. The hierarchic and administrative organization of the troops was perfected to an almost ideal state of bureaucracy, but with the same result that we now see in Russia: a perfect organization of embezzlement and fraud at the expense of the state, with armies costing enormous sums and existing in part only on paper. The contact with the irregular horse of the East reduced both the importance and quality of the infantry more and more. Mounted archers became the favorite arm; the greater part if not all of the infantry were also equipped with the bow beside the lance and sword. Thus, fighting at a distance became the fashion, hand-to-hand encounters being regarded as out of date. The infantry was considered such rubbish that it was intentionally kept away from the field of battle, and used for garrison duty principally; most of the battles of Belisarius were fought by the cavalry exclusively, and when the infantry partook in them, it was sure to run away. His tactics were entirely based upon the principle of avoiding a combat at close quarters, and of tiring out the enemy. If he succeeded in this against the Goths, who had no distance arms at all, by choosing broken ground in which their phalanx could not act, he was beaten by the Franks, whose infantry had something of the old Roman mode of fighting about them, and by the Persians, whose cavalry was certainly superior to his.—The German invaders of the Roman empire originally consisted for the greater part of infantry, and fought in a kind of Doric phalanx, the chiefs and wealthier men in the front ranks, the others behind them. Their arms were the sword and lance. The Franks, however, carried short, double-edged battle axes, which they threw, like the Roman pilum, into the hostile mass the moment before they charged sword in hand. They and the Saxons retained for some time a good and respected infantry; but gradually the Teutonic conquerors everywhere took to cavalry service, and left the duty of the foot soldiers to the conquered Roman provincials; thus the infantry service became despised as an attribute of slaves and serfs, and the character of the foot soldier necessarily sunk in proportion. By the end of the 10th century cavalry was the only arm which really decided battles all over Europe; infantry, though far more numerous in every army than cavalry, was nothing better than an ill-armed rabble with hardly any attempt at organization. A foot soldier was not even considered a soldier; the word *miles* became synonymous with horseman. The only chance for maintaining a respectable infantry lay with the towns, especially in Italy and Flanders. They had a militia of their own which was necessarily formed of infantry; and as its service for the protection of the towns, in the midst of the never-ending feuds among the surrounding nobles, was a permanent one, it was soon found convenient to have a force of paid mercenaries instead of a militia composed of the citizens, this latter force being reserved for extraordinary occasions. Still, we do not find that the contingents of the towns showed any marked superiority over the rabble of footmen collected by the nobles, and in battle always left to protect the baggage. This holds good, at least, for the classic period of chivalry. In the cavalry of these times, every knight appeared armed cap-à-pie, covered all over with armor, and mounting a similarly armed horse. He was accompanied by an esquire rather more lightly armed, and by sundry other mounted men without any armor and armed with bows. In order of battle, these forces were ranged upon a principle similar to that of the ancient Doric phalanx—the heavily armed knights in the first, the esquires in the second rank, the mounted archers behind them. These last, from the nature of their arm, were soon employed in dismounted fighting, which became more and more the rule with them, so that their horses were mainly used for locomotion, not for a charge. The English archers, armed with the long-bow, while those of southern Europe carried the cross-bow, especially excelled in this mode of fighting on foot, and it was very likely this circumstance which soon led to an extension, in this service, of dismounted fighting. No doubt, in their long campaigns in France, the horses of the heavily armed knights got soon knocked up and unfit to serve for more than means of transport. In this plight it was natural that the worst mounted *gendarmes* should dismount and form a phalanx of lances, to be filled up by the better portion of the footmen (especially the Welsh); while those whose horses were still fit for a charge, now formed the actual fighting cavalry. Such an arrangement appeared very well adapted for defensive battles, and upon it were based all the battles of the Black Prince, and, as is well known, with perfect success. The new mode of fighting was soon adopted by the French and other nations, and may be considered as almost the normal system of the 14th and 15th centuries. Thus, after 1,700 years, we are brought back almost to the tactics of Alexander; with this difference only, that with Alexander cavalry was a newly introduced arm which had to strengthen the declining capabilities of the heavy infantry, while here the heavy infantry, formed by dismounted horsemen, was a living proof that cavalry was on the decline, and that a new day had dawned for infantry. IV. THE REVIVAL OF INFANTRY. From the Flemish towns, then, the first manufacturing district of the world, and from the Swiss mountains, arose the first troops which, after centuries of decline, again deserved the name of infantry. The French chivalry succumbed as much to the weavers and fullers, the goldsmiths and tanners of the Belgian cities, as the Burgundian and Austrian nobility to the peasants and cowherds of Switzerland. Good defensive positions and a light armament did the most, supported as they were in the case of the Flemish by numerous fire-arms, and in that of the Swiss by a country almost impracticable to the heavily armed knights of the time. The Swiss carried principally short halberts, which might be used as well for thrusting as for striking, and were not too long for hand-to-hand fight; subsequently they also had pikes, and cross-bows and fire-arms; but in one of their most celebrated battles, at Laupen (1339), they had no arms for distant fighting but stones. From defensive encounters in their inaccessible mountains, they soon came to offensive battles in the plain, and with these to more regular tactics. They fought in a deep phalanx; defensive armor was light, and in general confined to the front ranks and the flank files, the centre being filled up by men without armor; the Swiss phalanx, however, was always formed in 3 distinct bodies, an advanced guard, a main body, and a rear guard, so that greater mobility and the chance of varied tactical arrangements were secured. They soon became expert in taking advantage of the accidents of ground, which, coupled with the improvement in fire-arms, protected them against the onslaught of cavalry, while against infantry armed with long lances they devised various means to work an entrance somewhere through the forest of lances, after which their short heavy halberts gave them an immense advantage, even against men cased in armor. They very soon learned, especially when assisted by artillery and small fire-arms, to hold out in squares or cross-shaped bodies against the charges of cavalry; and as soon as an infantry was again capable of doing that, the days of chivalry were numbered. About the middle of the 15th century the struggle of the cities against the feudal nobility had been everywhere taken up by the princes of the larger monarchies now consolidating, and consequently the latter had begun to form armies of mercenaries both for putting down the nobles and for carrying out independent objects of foreign policy. Beside the Swiss, the Germans, and soon after them most other European nations, began to furnish large contingents of mercenaries, raised by voluntary enlistment, and selling their services to the highest bidder without any regard to nationality. These bands formed themselves tactically upon the same principle as the Swiss; they were armed chiefly with pikes, and fought in large square battalions, as many men deep as there were in the front rank. They had to fight, however, under different circumstances from the Swiss who defended their mountains; they had to attack as well as to hold out in defensive positions; they had to encounter the enemy in the plains of Italy and France as well as in the hills; and they very soon found themselves face to face with the now rapidly improving small arms. These circumstances caused some deviations from the old Swiss tactics, which were different according to the different nationalities; but the chief characteristics, the formation in 3 deep columns, figuring in name, if not always in reality, as advanced guard, main body, and rear guard or reserve, remained common to all. The Swiss retained their superiority until the battle of Pavia, after which the German *Landsknechte*, who had already for some time been nearly if not fully equal to them, were considered the first infantry of Europe. The French, whose infantry had as yet never been good for any thing, tried very hard during this period to form a serviceable national body of foot soldiers; but they succeeded with the natives of two provinces only, the Picards and the Gascons. The Italian infantry of this period never counted for any thing. The Spaniards, however, among whom Gonsalvo de Cordova during the wars with the Moors of Granada first introduced the Swiss tactics and armament, very soon rose to considerable reputation, and after the middle of the 16th century began to pass for the best infantry of Europe. While the Italians, and after them the French and Germans, extended the length of the pike from 10 to 18 feet, they retained shorter and more handy lances, and their agility made them very formidable with sword and dagger in close encounter. This reputation they upheld in western Europe—France, Italy, and the Netherlands at least—to the close of the 17th century.—The contempt of the Swiss for defensive armor, based upon traditions of a different time, was not shared by the pikemen of the 16th century. As soon as a European infantry was formed in which the different armies were becoming more and more equal to each other in military qualities, the system of lining the phalanx with a few men covered with breastplates and helmets proved to be insufficient. If the Swiss had found such a phalanx impenetrable, this was no longer the case when it was met by another phalanx quite its equal. Here a certain amount of defensive armor became of some importance; so long as it did not too much impede the mobility of the troops, it was a decided advantage. The Spaniards, moreover, had never participated in this contempt for breastplates, and they began to be respected. Accordingly, breastplates, helmets, cuissarts, brassarts, and gauntlets began again to form a part of the regular equipment of every pikeman. To it was added a sword, shorter with the Germans, longer with the Swiss, and now and then a dagger. V. THE INFANTRY OF THE 16TH AND 17TH CENTURIES. The longbow had for some time disappeared from the continent of Europe, excepting Turkey; the cross-bow made its last appearance among the French Gascons in the first quarter of the 16th century. It was everywhere replaced by the matchlock musket, which, in different degrees of perfection, or rather imperfection, now became the second arm of the infantry. The matchlocks of the 17th century, unwieldy and defectively constructed machines, were of very heavy caliber, to secure, beside range, at least some precision, and the force to penetrate the breastplate of a pikeman. The form generally adopted about 1530 was the heavy musket fired off from a fork, as a man could not have taken aim without such a support. The musketeers carried a sword, but no defensive armor, and were used either for skirmishing or in a kind of open order, to hold defensive positions or to prepare the charge of the pikemen for the attack of such positions. They soon became very numerous in proportion to the pikemen; in the battles of Francis I. in Italy they were far inferior to the pikemen in numbers, but were at least in equal numbers with them 30 years later. This increase in the number of musketeers compelled the invention of some tactical method of regularly encasing them in the order of battle. This was done in the system of tactics called the Hungarian ordinance, invented by the imperial troops in their wars with the Turks in Hungary. The musketeers, being unable to defend themselves at close quarters, were always placed so as to be able to retire behind the pikemen. Thus they were sometimes placed on either wing, sometimes on the 4 corners of the wings; very often the whole square or column of pikemen was surrounded by a rank of musketeers, who found protection under the pikes of their rear men. Finally, the plan of having the musketeers on the flanks of the pikemen got the upper hand in the new tactical system introduced by the Dutch in their war of independence. This system is distinguished especially by the subdivision of the 3 great phalanges in which every army was formed according to both the Swiss and Hungarian tactics. Each of them was formed upon 3 lines, the middle one of which was again subdivided into a right and a left wing, separated from each other by a distance equal at least to the extent of front of the first line. The whole army being organized in half regiments, which we will call battalions, each battalion had its pikemen in the centre and its musketeers on the flanks. The advanced guard of an army, consisting of 3 regiments, would thus be formed as follows: two half regiments in contiguous line in the first line; behind each of their wings another half regiment; further to the rear, and covering the first line, the remaining two half regiments also in contiguous line. The main body and rear guard might be placed either on the flank or behind the advanced guard, but would be formed on the same plan. Here we have a return in a certain degree to the old Roman formation in 3 lines and distinct small bodies. The imperialists, and with them the Spaniards, had found the necessity of dividing their large armies into more than the 3 masses already mentioned; but their battalions or tactical units were much larger than the Dutch, fought in column or square instead of in line, and had not had a regular formation for order of battle until during the Dutch war of independence the Spaniards began to form them in what is known as a Spanish brigade. Four of these large battalions, each consisting often of several regiments, formed in square, surrounded with a rank or two of musketeers, and having wings of musketeers at the corners, were disposed at proper intervals on the 4 corners of a square, one corner being turned toward the enemy. If the army was too large to be comprised in one brigade, two could be formed; and thus arose 3 lines, having 2 battalions in the first, 4 (sometimes only 3) in the second, and 2 in the third. As in the Dutch system, we find here the attempt to return to the old Roman system of 3 lines.—Another great change took place during the 16th century; the heavy cavalry of the knights was broken up and replaced by a mercenary cavalry, armed similarly to our modern cuirassiers, with cuirass, helmet, sword, and pistols. This cavalry, greatly superior in mobility to their predecessors, became thereby more formidable to infantry also; still the pikemen of the time were never afraid of it. By this change cavalry became a uniform arm, and entered in a far larger proportion into the composition of armies, especially during the period we now have to consider, viz., the 30 years' war. At this time the system of mercenary service was universal in Europe; a class of men had been formed who lived upon war and by war; and though tactics might have gained thereby, the character of the men, the material composing armies as well as their *morale*, had certainly suffered. Central Europe was overrun by *condottieri* of all kinds, who took religious and political quarrels for their pretext to plunder and devastate the whole country. The character of the individual soldier had entered upon that degradation which went on increasing until the French revolution finally swept away this system of mercenary service. The imperialists formed their battles upon the Spanish brigade system, having 4 or more brigades in line, thus forming 3 lines. The Swedes under Gustavus Adolphus formed in Swedish brigades, each consisting of 3 battalions, one in front and two a little to the rear, each deployed in line, and having the pikes in the centre and the musketeers on the wings. They were so disposed (both arms being represented in equal numbers) that by forming a contiguous line either could cover the other. Supposing the order given to form a contiguous line of musketeers, the two wings of that arm of the centre or front battalion would cover their own pikes by stepping before them, while those of the two other battalions would, each on its flank, advance into alignment with the first. If an attack of cavalry was apprehended, all the musketeers retired behind the pikemen, while the two wings of these latter advanced into alignment with the centre, and thus formed a contiguous line of pikes. The order of battle was formed of two lines of such brigades, composing the centre of the army, while the numerous cavalry was stationed on the two wings, and intermixed with small bodies of musketeers. The characteristic of this Swedish system is that the pikemen, who in the 16th century had been the great offensive arm, had now lost all capacity of attack. They had become a mere means of defence, and their office was to screen the musketeers from a charge of cavalry; it was this latter arm again which had to do all the attacking work. Thus, infantry had lost, cavalry had regained ground. But then Gustavus Adolphus put an end to the firing which had become a favorite mode of fighting for cavalry, and ordered his horse always to charge at full speed and sword in hand; and from that time to the resumption of fighting in broken ground every cavalry which adhered to these tactics was able to boast of great successes over infantry. There can be no greater condemnation of the mercenary infantry of the 17th and 18th centuries than that; and yet it was, for all purposes of battle, the most disciplined infantry of all times. The general result of the 30 years' war upon European tactics was that both the Swedish and the Spanish brigades disappeared, and armies were now disposed in two lines, the cavalry forming the wings and the infantry the centre. The artillery was placed before the front or in the intervals of the other arms. Sometimes a reserve of cavalry, or of cavalry and infantry, was retained. The infantry was deployed in line, 6 deep; the muskets were so much lightened that the fork could be dispensed with, and cartridges and cartridge boxes had been everywhere adopted. The mixing up of musketeers and pikemen in the same infantry battalions now gave rise to the most complicated tactical movements, all founded upon the necessity of forming what was called defensive battalions, or what we should call squares against cavalry. Even in a simple square, it was no trifle to get the 6 ranks of pikemen from the centre so drawn asunder that they completely surrounded on all sides the musketeers, who, of course, were defenceless against cavalry; but what must it have been to form in a similar way the battalion into a cross, an octagon, or other fanciful shapes! Thus it happened that the drilling system of this period was the most complicated ever seen, and nobody but a soldier for life ever had any chance of attaining even the commonest proficiency in it. At the same time, it is obvious that, before the enemy, all these attempts at forming a body capable of resisting cavalry were perfectly useless; any decent cavalry would have been in the midst of such a battalion before one fourth of the movements could have been gone through.—During the latter half of the 17th century, the number of pikemen was very much reduced in proportion to that of musketeers; for from the moment that they had lost all power of attack, the musketeers were the really active part of the infantry. Moreover, it was found that the Turkish cavalry, the most formidable of the time, very often broke into the squares of pikemen, while they were quite as often repulsed by the well aimed fire of a line of musketeers. In consequence, the imperialists did away with all pikes in their Hungarian army, and replaced them sometimes by *chevaux de frise*, which were put together on the field, the musketeers carrying the blades as part of their regular equipment. In other countries, too, cases occurred of armies being sent into the field without a single pikeman, the musketeers trusting to their fire and the assistance of their own cavalry when threatened with a charge of horse. Still, two inventions were required to do away entirely with the pike: the bayonet, invented in France about 1640, and improved in 1699 so far as to be the handy weapon now in use; and the flint lock, invented about 1670. The former, though certainly an imperfect substitute for the pike, enabled the musketeer to give himself, to a certain degree, that protection which he had hitherto been supposed to find in the pikemen; the second, by simplifying the process of loading, enabled him to do much more than make up by rapid firing for the imperfections of the bayonet. VI. THE INFANTRY OF THE 18TH CENTURY. With the superseding of the pike, all defensive armor disappeared from infantry equipment, and this arm was now composed of one class of soldiers only, armed with the flint-lock musket and bayonet. This change was accomplished in the first years of the Spanish war of succession, coinciding with the first years of the 18th century. At the same time, we now find everywhere standing armies of considerable magnitude, recruited as much as possible by voluntary enlistment coupled with kidnappping, but in case of need also by forced conscription. These armies were now regularly organized in battalions of from 500 to 700 men, as tactical units, subdivided for special purposes into companies; several battalions forming a regiment. Thus the organization of infantry now began to take a more stable and settled form. The handling of the flint lock requiring far less space than that of the old matchlock, the old open order was done away with, and the files were closed well up to each other, in order to have as many firing men as possible in the same space. For the same reason, the intervals between the various battalions in line of battle were reduced to a minimum, so that the whole front formed one stiff and uninterrupted line, the infantry, in two lines, in the centre, the cavalry on the wings. Firing, formerly done by ranks, every rank after having fired retiring to the rear to reload, was now done by platoons or companies, the 3 front ranks of each platoon firing simultaneously as the word of command was given. Thus an uninterrupted fire could be maintained by every battalion against the enemy in front of it. Every battalion had its distinct place in this long line, and the order giving to each its place was called the order of battle. The great difficulty now was to organize the marching order of the army so that it could always with facility pass from the marching to the fighting order, every portion of the line getting at once and quickly into its proper place. Encampments within reach of the enemy were arranged with a view to the same object. Thus the art of marching and encamping armies made great progress during this epoch; still the stiffness and unwieldiness of the order of battle formed a heavy clog upon all the movements of an army. At the same time, its formality, and the impossibility of handling such a line in any but the most level plains, still more restricted the choice of ground for battle fields; but as long as both parties were bound by the same fetters, this was no disadvantage for either. From Malplaquet to the outbreak of the French revolution, a road, a village, or a farm yard was tabooed to infantry; even a ditch or a hedge was considered almost a drawback by those who had to defend them. The

Prussian infantry is the classic infantry of the 18th century. It was principally formed by Prince Leopold of Dessau. During the war of the Spanish succession, the line of infantry had been reduced from 6 deep to 4 deep. Leopold did away with the 4th rank, and formed the Prussians 3 deep. He also introduced the iron ramrod, which enabled his troops to load and fire 5 times in a minute, while other troops scarcely fired 3 times. At the same time they were drilled to fire while advancing, but as they had to stop for firing, and as the alignment of the whole long line had to be maintained, the step was but slow—what is called the goose step. Firing began at 200 yards from the enemy; the line advanced at the goose step, stepping shorter and redoubling fire the nearer it got to the enemy, until the latter either gave way, or was so far shaken that a cavalry charge from the wings, and an advance with the bayonet of the infantry, drove him from his position. The army was always ranged on two lines, but, there being scarcely any intervals in the first line, it became very difficult for the second to come to the aid of the first when wanted. Such was the army and such were the tactics which Frederic II. of Prussia found at his disposal on his accession. There appeared to be very little chance for a man of genius to improve upon this system, unless he broke through it, and that Frederic, in his position and with the material he had for soldiers, could not do. Still he contrived to organize his mode of attack and his army so that he could, with the resources of a kingdom less than Sardinia now is, and with scanty pecuniary support from England, carry on a war against almost all Europe. The mystery may be easily explained. Hitherto the battles of the 18th century had been parallel battles, both armies being deployed on lines parallel to each other, struggling in a plain, fair, stand-up fight, without any stratagems or devices of art; the only advantage accruing to the stronger party being that his wings overlapped those of his opponent. Frederic applied to the line order of battle the system of oblique attack invented by Epaminondas. He chose one wing of the enemy for the first attack, and brought against this one of his wings, overlapping that of the enemy, and part of his centre, at the same time keeping back the rest of his army. Thus not only had he the advantage of outflanking the enemy, but also of crushing by superior forces the troops exposed to his attack. The other troops of the enemy could not come to the assistance of those attacked; for not only were they tied to their places in the line, but as the attack on the one wing proved successful, the remainder of the army entered into line and engaged the hostile centre in front, while the original attacking wing fell upon its flank after disposing of the wing. This was indeed the only imaginable method by which it was possible, while maintaining the system of lines, to bring a superior force upon any one part of the enemy's line of battle. Every thing, then, depended upon the formation of the attacking wing; and as far as the rigidity of the order of battle admitted of it, Frederic always strengthened it. He very often placed in front of the first line of infantry of the attacking wing an advanced line formed of his grenadiers or élite troops, so as to insure success as much as possible at the first onset. The second means which Frederic took to improve his army was the reorganization of his cavalry. The teachings of Gustavus Adolphus had been forgotten; cavalry, instead of relying on the sword and the impetuosity of the charge, with rare exceptions had returned to fighting with the pistol and the carbine. The wars in the beginning of the 18th century had thus not been rich in successful charges of horsemen; the Prussian cavalry was especially neglected. But Frederic returned to the old plan of charging sword in hand and at full gallop, and formed a cavalry unequalled in history; and to this cavalry he owed a very great part of his successes. When his army became the model of Europe, Frederic, in order to blind the military men of other nations, began to complicate to an astonishing degree the system of tactical evolutions, all of them unfit for actual war, and intended only to hide the simplicity of the means which had procured him victory. He succeeded so well in this that nobody was more blinded than his own subordinates, who actually believed that these complex methods of forming line were the real essence of his tactics; and thus Frederic, beside laying the foundation for that pedantry and martinetism which have since distinguished the Prussians, actually prepared them for the unparalleled disgrace of Jena and Auerstädt.—Beside the infantry of the line, which we have so far described, and which always fought in closed ranks, there was a certain class of light infantry, but this did not appear in great battles. Its task was the war of partisans; for this the Austrian Croats were admirably adapted, while for every other purpose they were useless. Upon the model of these half savages from the military frontier against Turkey, the other European states formed their light infantry. But skirmishing in great battles, such as was practised by the light infantry of antiquity and of the middle ages, even up to the 17th century, had completely disappeared. The Prussians alone, and after them the Austrians, formed a battalion or two of riflemen, composed of gamekeepers and forest guards, all dead shots, who in battle were distributed over the whole front and fired at officers; but they were so few that they scarcely counted. The resuscitation of skirmishing is the product of the American war of independence. While the soldiers of European armies, held together by compulsion and severe treatment, could not be trusted to fight in extended order, in America they had to contend with a population which, untrained to the regular drill of line soldiers, were good shots and well acquainted with the rifle. The nature of the ground favored them; instead of attempting manœuvres of which at first they were incapable, they unconsciously fell into skirmishing. Thus, the engagement of Lexington and Concord marks an epoch in the history of infantry. VII. THE INFANTRY OF THE FRENCH REVOLUTION AND OF THE 19TH CENTURY. When the European coalition invaded revolutionary France, the French were in a similar position to that of the Americans a short time before, except that they had not the same advantages of ground. In order to fight the numerous armies, invading or threatening to invade the country, upon the old line principle, they would have required well drilled men, and these were scarce, while undrilled volunteers were plentiful. As far as time allowed, they were exercised in the elementary evolutions of linear tactics; but as soon as they got under fire, the battalions deployed in line dissolved themselves, unconsciously, into thick swarms of skirmishers, seeking protection against fire from all accidents of ground, while the second line formed a kind of reserve which often enough was involved in the fight from the very beginning of the engagement. The French armies, moreover, were very differently organized from those opposed to them. They were formed, not into an unbending monotonous line of battalions, but into army divisions, each of which was composed of artillery, cavalry, and infantry. The great fact was all at once rediscovered that it matters not whether a battalion fights in its "correct" place in the order of battle, so that it advances into line when ordered, and fights well. The French government being poor, tents and the immense baggage of the 18th century were done away with; bivouacking was invented, and the comforts of the officers, which in other armies formed a large portion of the impediments, were reduced to what they could carry on their backs. The army, instead of being fed from magazines, had to depend upon requisitions on the country passed through. Thus the French attained a mobility and a facility of forming order of battle quite unknown to their enemies. If beaten, they were out of the reach of pursuit in a few hours; if advancing, they could appear on unexpected points, on the flanks of the enemy, before he got notice. This mobility, and the jealousy among themselves of the chiefs of the coalition, gave them breathing time to drill their volunteers, and to elaborate the new tactical system which was rising among them. From the year 1795 we find this new system taking the definite form of a combination of skirmishers and close columns. The formation in line was subsequently added, though not for a whole army as hitherto, but for single battalions only, which deployed in line whenever an opportunity appeared to require it. It is evident that this latter manœuvre, requiring more steadiness of drill, was the last to be resumed by the irregular bands of the French revolution. Three battalions formed a demi-brigade, 6 a brigade; 2 or 3 brigades of infantry a division, to which were added 2 batteries of artillery and some cavalry; several such divisions formed an army. Whenever a division met the enemy, the skirmishers of its advanced guard established themselves in a defensive position, the advanced guard forming their reserve until the division came up. The brigades then formed upon two lines and a reserve, but every battalion in column, and with no stated intervals; for the protection of rents in the order of battle there was the cavalry and the reserve. The line of battle was no longer necessarily a straight and uninterrupted one; it might be bent in all directions, as the ground required, for now there was no longer a selection of naked level plains for battle fields; on the contrary, the French preferred broken ground, and their skirmishers, forming a chain in front of the whole line of battle, threw themselves into every village, farm yard, or copse that they could get hold of. If the battalions of the first line deployed, they generally all turned soon into skirmishers; those of the second line always remained in column, and generally charged in this formation against the thin lines of the enemy with great success. Thus, the tactical formation of a French army for battle gradually came to consist of two lines, each formed of battalions in close column, placed *en échiquier*, with skirmishers before the front, and a compact reserve in the rear. It was at this stage of development that Napoleon found the tactics of the French revolution. As soon as his accession to political power allowed him to do so, he began to develop the system still further. He concentrated his army in the camp of Boulogne, and there gave them a regular course of drill. He especially practised them in the formation of compact reserve masses on a small space of ground, and in the quick deployment of these masses for entering into line. He formed 2 or 3 divisions into one army corps so as to simplify the command. He invented and brought to its highest perfection the new marching order, which consists in spreading the troops over so great an extent of ground that they can subsist on the stores it contains, still keeping so well together that they can be united on any given point before the part which is attacked can be crushed by the enemy. From the campaign of 1809, Napoleon began to invent new tactical formations, such as deep columns of entire brigades and divisions, which however signally failed and were never again revived. After 1813 this new French system became the common property of all nations on the continent of Europe. The old line system, and the system of recruiting mercenaries, had both been abandoned. Everywhere the liability of every citizen to military service was acknowledged, and everywhere the new tactics were introduced. In Prussia and Switzerland every one had actually to serve; in the other states a conscription was introduced, the young men drawing lots to determine who should serve; everywhere reserve systems were introduced, by dismissing a portion of the men, when drilled, to their homes, so as to have a large number of drilled men at disposal in case of war, with little expense in peace.—Since that time several changes have occurred in the armament and organization of infantry, produced partly by the progress of the manufacture of small arms, partly by the collision of French infantry with the Arabs of Algeria. The Germans, always fond of the rifle, had increased their battalions of light riflemen; the French, driven by the necessity of having in Algeria an arm of greater range, at last in 1840 formed a battalion of riflemen armed with an improved rifle of great precision and range. These men, drilled to perform all their evolutions and even long marches in a kind of trot (*pas gymnastique*), soon proved themselves of such efficiency that new battalions were formed. In this manner a new light infantry was created, not from sporting shots and gamekeepers, but from the strongest and most agile men; precision of fire and long range were combined with agility and endurance, and a force was formed which, as far as it went, was certainly superior to any other infantry in existence. At the same time, the *pas gymnastique* was introduced into the infantry of the line, and what even Napoleon would have considered the height of folly, running, is now practised in every army as an essential part of infantry drill. The success of the new rifle of the French riflemen (Delvigne-Pontchara) soon produced new improvements. The conical bullet was introduced for rifled arms. New means were invented by Minié, Lorenz, and Wilkinson, to make the bullet glide down easily into the bore, and still to expand it, when once down, so as to fill up the grooves with its lead, and thus to give it the lateral rotation and force on which the effect of the rifle depends; on the other hand, Dreysa invented the needle gun, to be loaded at the breech, and not requiring a separate priming. All these rifles were capable of hitting at 1,000 yards, and quite as easily loaded as a common smooth-bore musket. Then the idea arose of arming the whole of the infantry with such rifles. England was the first to carry out this idea; Prussia, which had prepared for this step long before, followed; then Austria and the smaller German states; at last France. Russia, and the Italian and Scandinavian states, are still behind. This new armament has completely changed the aspect of warfare, but not in the way expected by tactical theorists, and for a very simple mathematical reason. It can be easily proved, by constructing the flight of these bullets, that an error of 20 or 30 yards in the estimation of the distance of the object will destroy all chance of hitting beyond 300 or 350 yards. Now, while on the practice ground the distances are known, on the battle field they are not, and they change every moment. Infantry posted in a defensive position, and having had time to pace off the distances of the most conspicuous objects before the front, will thus have an immense advantage, at from 1,000 to 300 yards, over an attacking force. This can only be obviated by advancing rapidly and without firing, at full trot, to some 300 yards, when the fire of the two parties will be equally effective. At this distance firing will become so murderous between two well posted lines of skirmishers, and so many bullets will hit the pickets and reserves, that a plucky infantry can do no better than seize the first opportunity to make a rush at the enemy, giving a volley at 40 or 50 yards. These rules, first proved theoretically by the Prussian Major Trotha, have been practically tried by the French in their late war against the Austrians, and with success. They will, therefore, form part and parcel of modern infantry tactics, especially if they prove to be of equally good effect when tried against such a rapidly loading arm as the Prussian needle gun. The arming of all infantry with one and the same rifle gun will tend to do away with the distinctions, still existing, of light and line infantry, by forming an infantry capable of any service. In this will evidently consist the next improvement of this arm.

Navy

NAVY, a collective term for the vessels of war belonging to a sovereign or nation. The war fleets of the ancients, though often numerous, were insignificant when compared with those of the present day, in regard to the size of the ships, their powers of locomotion, and their aptitude for offence. The sea-going vessels of Phœnicia and Carthage, of Greece and Rome, were flat-bottomed barges, unable to live in a gale of wind; sea room, in a squall, was destruction to them; they crept along the coasts, casting anchor at night in some cove or creek. To cross over from Greece to Italy, or from Africa to Sicily, was a dangerous operation. The ships, unfit to carry the press of sail to which our modern men-of-war are accustomed, were provided with but little canvas; the oars were relied upon to propel them sluggishly through the waves. The compass had not yet been discovered; latitudes and longitudes were unknown; and landmarks and the pole star were the only guides in navigation. The implements for offensive warfare were equally inefficient. Bows and arrows, javelins, clumsy ballistas and catapults, were the only arms that could be used at a distance. No serious harm could be done to an enemy at sea until the two fighting ships came into actual contact. Thus, there were but two modes of naval fighting possible: to manœuvre so that the sharp, strong, iron-pointed prow of your own ship should be driven with full force against the enemy's broadside in order to run him down; or else to run on broadside to broadside, fasten the two ships together, and board the enemy at once. After the first Punic war, which destroyed the naval superiority of the Carthaginians, there is not a single naval engagement in ancient history offering the slightest professional interest, and Roman dominion soon put an end to the possibility of further naval contests in the Mediterranean.—The real birthplace of our modern navies is the German ocean. About the time when the great mass of the Teutonic tribes of central Europe rose to trample down the decaying Roman empire and to regenerate western Europe, their brethren on the northern shores, the Frisians, Saxons, Angles, Danes, and Northmen, began to take to the sea. Their vessels were firm, stout sea boats, with a prominent keel and sharp lines, relying mostly on sails alone, and not afraid to face a gale in the middle of that rough northern sea. It was with this class of vessels that the Anglo-Saxons passed from the mouths of the Elbe and Eider to the shores of Britain, and that the Northmen undertook their roving expeditions, extending to Constantinople on the one side and America on the other. With the construction of ships that dared cross the Atlantic, navigation underwent a complete revolution; and before the middle ages had passed away, the new sharp-bottomed sea boats had been adopted on all the coasts of Europe. The vessels in which the Northmen made their excursions were probably of no very large size, perhaps not exceeding 100 tons burden in any case, and carrying one or at the outside two masts, fore-and-aft rigged. For a long time both ship building and navigation appear to have remained stationary; during the whole of the middle ages vessels were small, and the bold spirit of the Northmen and the Frisians had passed away; whatever improvements were made were owing to Italians and Portuguese, who now became the boldest sailors. The Portuguese discovered the route by sea to India; two Italians in foreign service, Columbus and Cabot, were the first since the times of Leif the Northman to cross the Atlantic. Long sea voyages now became a necessity, and they required large ships; at the same time the necessity of arming vessels of war and even merchantmen with heavy artillery, equally tended to increase size and tonnage. The same causes which had produced standing armies on land, now produced standing navies afloat; and it is from this time only that we can properly speak of navies. The era of colonial enterprise which now opened for all seafaring nations, also witnessed the formation of large fleets of war to protect the newly formed colonies and their trade; and a period followed richer in naval struggles and more fruitful to the development of naval armaments than any that preceded it.—The foundation of the British navy was laid by Henry VII., who built the first ship called "The Great Harry." His successor formed a regular standing fleet, the property of the state, the largest ship of which was called the Henry Grace de Dieu. This vessel, the largest ever built up to that time, carried 80 guns, partly on two regular flush gun decks, partly on additional platforms both forward and astern. She was provided with 4 masts; her tonnage is variously stated at from 1,000 to 1,500. The whole of the British fleet, at the death of Henry VIII., consisted of about 50 sail, with an aggregate tonnage of 12,000, and manned by 8,000 sailors and marines. The large ships of the period were clumsy contrivances, deep-waisted, that is to say, provided with towering forecastles and poops, which rendered them exceedingly top-heavy.

The next large ship we hear of is the Sovereign of the Seas, afterward called the Royal Sovereign, built in 1637. She is the first vessel of whose armament we get something like an accurate account. She had 3 flush decks, a forecastle, a half deck, a quarter deck, and a round house; on her lower deck she carried 30 guns, 42 and 32-pounders; 30 on her middle deck, 18 and 9-pounders; on her upper deck 26 lighter guns, probably 6 and 3-pounders. Beside these, she carried 20 chase guns and 26 guns on her forecastle and half deck. But on her regular home establishment this armament was reduced to 100 guns, the full complement being evidently too much for her. As to the smaller vessels, our information is very scanty. In 1651 the navy was classed in 6 rates; but beside them there continued to exist numerous classes of unrated ships, such as shallops, hulks, and later bombs, sloops, fire ships, and yachts. In 1677 we find a list of the whole English navy; according to which, the largest first rate three-decker carried 20 42-pdrs., 28 24-

pdrs., 28 9-pdrs., 14 6-pdrs., and 4 3-pdrs.; and the smallest two-decker (fifth rate) carried 18 18-pdrs., 8 6-pdrs., and 4 4-pdrs., or 30 guns in all. The whole fleet consisted of 129 vessels. In 1714, we find 198 vessels; in 1727, 178; and in 1744, 128. Afterward, as the number of vessels increases, their size also gets larger, and the heaviness of the armament is augmented with the tonnage. The first English ship answering to our modern frigate was built by Sir Robert Dudley, as early as the end of the 16th century; but it was not till fully 80 years later that this class of ships, first used by the southern European nations, was generally adopted in the British navy. The particular fast-sailing qualities of frigates were little understood, for some time, in England. British ships were generally overgunned, so that their lower ports were but 3 feet from the water's edge, and could not be opened in a rough sea, and the sailing capacities of the vessels were also greatly impaired. Both the Spaniards and the French allowed more tonnage in proportion to the number of guns; the consequence was that their ships could carry heavier caliber and more stores, had more buoyancy, and were better sailers. The English frigates of the first half of the 18th century carried as many as 44 guns, of 9, 12, and a few of 18 lbs. caliber, with a tonnage of about 710. By 1780 frigates of 38 guns (mostly 18-pdrs.) and of 946 tons were built; the improvement here is obvious. The French frigates of the same epoch, with a similar armament, averaged 100 tons more. About the same time (the middle of the 18th century) the smaller men-of-war were more accurately classed in the modern way as corvettes, brigs, brigantines, and schooners. In 1779 a piece of ordnance was invented (probably by the British Gen. Melville) which changed to a great extent the armaments of most navies. It was a very short gun, with a large caliber, approaching in its shape a howitzer, but intended to throw solid shot, with small charges, at short ranges. From these guns being first manufactured by the Carron iron company, in Scotland, they were called carronades. The shot from this gun, useless at long ranges, had fearful effects upon timber at close quarters; from its reduced velocity (by the reduced charge), it made a larger hole, shattered the timber far more, and made numerous and more dangerous splinters. The comparative lightness of the guns, too, made it easy to find room for a few of them on the quarter deck and forecastle of vessels; and as early as 1781 there were 429 ships in the British navy provided with from 6 to 10 carronades over and above their regular complement of guns. In reading the accounts of naval engagements during the French and American wars, it should be borne in mind that the British never include the carronades in the number of guns given as a ship's complement; so that, for instance, a British frigate, stated to be a 36-gun frigate, may in reality have carried 42 or more guns, including the carronades. The superior weight of metal which the carronades gave to the British broadsides, helped to decide many an action fought at close quarters during the war of the French revolution. But after all, carronades were merely a makeshift to increase the strength of the comparatively small-sized men-of-war of 80 years ago. As soon as the size of the ships was increased for each rating, they were again cast aside, and are now comparatively superseded. In this particular, the construction of men-of-war, the French and Spaniards were decidedly ahead of the English. Their ships were larger and designed with far better lines than the British; their frigates especially were superior both in size and sailing qualities; and for many years the English frigates were copied from the French frigate Hebe, captured in 1782. In the same proportion as the vessels were lengthened, the high towering erections at the bow and stern, the forecastles, quarter decks, and poops, were reduced in height, the sailing qualities of the ships being increased thereby; so that gradually the comparatively elegant and swift-sailing lines of the present men-of-war came to be adopted. Instead of increasing the number of guns to these larger ships, the caliber was increased, and so were the weight and length of each gun, in order to admit of the use of full charges, and to receive the greatest point-blank range, so as to allow of the fire being opened at long distances. The small calibers below 24 lbs. disappeared from the larger vessels, and the remaining calibers were simplified, so as to have no more than two calibers, or at the outside three, on board of any one vessel. In ships of the line, the lower deck, being the strongest, was armed with guns of the same caliber as the upper decks, but of greater length and weight, in order to have at least one tier of guns available for the greatest possible range. —About 1820 the French Gen. Paixhans made an invention which has been of great importance in naval armaments. He constructed a gun of large caliber provided with a narrow chamber at the breech for the insertion of the powder, and began to fire hollow shot, at low elevations, from these "shell guns" (*canons obusiers*). Hitherto hollow shot had been fired against ships from howitzers in shore batteries only; though in Germany the practice of firing shell horizontally from short 24-lb. and even 12-lb. guns had been long in use against fortifications. The destructive effects of shells against the wooden sides of vessels were well known to Napoleon, who at Boulogne armed most of his gun boats for the expedition to England with howitzers, and laid it down as a rule that ships must be attacked with projectiles which will burst after hitting. Now, Paixhans' shell guns gave the means of arming ships with cannon which, by throwing their shells as nearly as possible horizontally, could be used at sea, ship against ship, with nearly the same probability of hitting as the old round-shot guns. The new gun was soon introduced into all navies, and, after undergoing various improvements, now constitutes an essential portion of the armament of all large men-of-war.—Shortly afterward the first attempts were made to apply steam to the propulsion of ships of war, as it had already been applied by Fulton to that of commercial vessels. The progress from the river steamer to the coasting steamer, and gradually to the ocean steamer, was slow; in the same ratio was the progress of war steamers retarded. As long as paddle boats were the only steamers in existence, this was justifiable. The paddles and part of the engine were exposed to the enemy's shot, and could be disabled by a single lucky hit; they took up the best portion of the broadside room of the vessel; and the weight of engine, paddles, and coal so much reduced the capacity of the ship, that a heavy armament of numerous long guns was entirely out of the question. A paddle steamer, therefore, could never be a ship of the line; but its superior speed might permit it to compete with frigates, which are expected to hover on the flanks of an enemy, to collect the fruits of a victory, or to cover a retreat. Now a frigate has just the size and armament which enable it to go fearlessly on any independent roving errand, while its superior sailing qualities enable it to withdraw in time from an unequal contest. The sailing qualities of any frigate were far outstripped by the steamer; but without a good armament the steamer could not fulfil its mission. Regular broadside fighting was out of the question; the number of guns must, for want of space, be always inferior to that of a sailing frigate. Here, if anywhere, the shell gun was in its place. The diminished number of guns on board a steam frigate was counterbalanced by their weight of metal and caliber. Originally these guns were intended to throw shells only, but recently they have been made so heavy, especially the chase guns (at the bow and stern of the vessel), that they can, with full charges, throw solid shot also to considerable distances. Moreover, the reduced number of guns admits of traversing platforms and railways being laid down on the deck, by means of which all or most of the guns can be brought to bear in almost any direction; a provision by which the strength of a steam frigate for an attack is nearly doubled, and a 20-gun steam frigate can bring at least as many guns into action as a 40-gun sailing frigate with but 18 working guns for each single broadside. Thus the large modern paddle-steamer frigate is a most formidable ship; the superior caliber and range of her guns, added to her velocity, enable her to cripple an opponent at a distance where scarcely any effective return of fire is possible to the sailing vessel; while the weight of her metal comes in with crushing power when it is to her advantage finally to force the fighting. Still the disadvantage remains that her whole motive force is exposed to direct fire, and offers a large object to aim at. For smaller vessels, corvettes, advice boats, and other light craft, not counting in a naval battle, but very useful throughout a campaign, steam was at once found of great advantage, and there were many such paddle boats constructed in most navies. It was the same with transport ships. Where landings were intended, steamers not only reduced the length of passage to a minimum, but permitted one to calculate to a moral certainty the time of arrival at any given place. The transport of bodies of troops was now made a matter of great simplicity, especially as every naval country had a large fleet of commercial steamers to fall back upon for transport vessels in case of necessity. It was on these considerations that Prince de Joinville, in his well known pamphlet, ventured to maintain that steam had altered the condition of naval warfare to such an extent as to render an invasion of England by France no longer an impossibility. Still, so long as the ships used for decisive action, the ships of the line, remained exclusively sailing vessels, the introduction of steam could work but little change in the conditions under which great naval battles were fought. The invention of the screw propeller was destined to supply the means of revolutionizing naval warfare entirely, and to transform all war fleets into steam fleets. It was fully 13 years after the invention of the screw before the first step in this direction was made. The French, always superior to the English in naval design and construction, were the first to do it. Finally in 1849 the French engineer Dupuy-Delôme constructed the first screw line-of-battle ship, the Napoléon, of 100 guns and 600 horse power. This ship was not intended to depend upon steam only; unlike the paddles, the screw allowed a ship to retain all the lines and rigging of a sailing vessel, and to be moved, at will, by steam alone, by sails alone, or by both combined. She could, therefore, always save her coal for emergencies by having recourse to her sails, and was thus far less dependent upon the proximity of coaling stations than the old paddle-wheel steamer. On this account, and because her steam power was too weak to give her the full speed of a paddle steamer, the Napoléon and other vessels of this class were called auxiliary steam vessels; since then, however, ships of the line have been constructed which have steam power enough to give them all the speed of which the screw propeller is capable. The success of the Napoléon soon caused screw ships of the line to be built both in France and England. The Russian war gave a new impulse to this radical change in naval construction; and when it was found that most strong-built ships of the line could, without too much difficulty, be fitted with a screw and engines, the transformation of all navies into steam fleets became only a matter of time. No large naval power now thinks of constructing any more large sailing vessels; almost all ships newly laid down are screw steamers, excepting the few paddle steamers which for certain purposes are still required; and before 1870 sailing ships of war will be almost as completely antiquated as the spinning wheel and the smooth-bore musket are now.—The Crimean war called into existence two new naval constructions. The first of these is the steam gun boat or mortar boat, originally constructed by the English for the contemplated attack on Cronstadt; it is a small vessel drawing from 4 to 7 feet of water, and armed with one or two heavy long-range guns or a heavy mortar; the former to be used in shallow and intricate waters generally, the latter in the bombardment, from a long distance, of fortified naval arsenals. They answered exceedingly well, and will no doubt play an important part in future naval campaigns. The mortar boat, as proved at Sveaborg, totally alters the relations of attack and defence between fortresses and ships, by giving the ships that power of bombarding the former with impunity which they never before possessed; at 3,000 yards, from which the shells of the mortar boats can hit an object as large as a town, they are themselves quite secure from their smallness of surface. The gun boats, on the contrary, when acting in concert with coast batteries, will strengthen the defence, and will also provide naval warfare with those light skirmishers which were hitherto wanting to it. The second innovation is the iron-sided, shot-proof floating batteries, first constructed by the French, for the attack of coast defences. They were tried at Kinburn only, and their success, even against the rickety parapets and rusty cannon of that little place, was not so very signal. Still, the French appeared to be so well satisfied with them, that they have gone on ever since experimenting upon steel-plated vessels. They have constructed gun boats with a kind of shot-proof steel parapet on the forecastle, which shelters the gun and its crew: but if the floating batteries were unwieldy and had to be towed, these gun boats always had their heads in the water and were not at all seaworthy. They have however produced a steel-plated steam frigate called La Gloire, which is said to be shot-proof, of very good speed, and quite capable of living in a gale. The most exaggerated statements are made with regard to the probable revolution these shot-proof frigates will create in naval warfare. We are told that ships of the line are antiquated, and that the power to decide great naval actions has passed over to these frigates with a single battery of guns, covered in shot-proof on all sides, against which no wooden three-decker can stand. This is not the place to argue these questions; but we may observe that it is far easier to invent and put on board ship rifled artillery heavy enough to smash iron or steel plates, than it is to construct vessels cased with metal thick enough to withstand the shot or shell from these guns. As to the Gloire, it is not certain after all that she is fit to live in a gale, and from her incapacity for holding coal it is said that she cannot keep the sea under steam for more than 3 days. What her British competitor, the Warrior, will do, remains to be seen. No doubt, by reducing the armament and coal, and by altering the mode of construction, it may be possible to render a ship entirely shot-proof at long and medium ranges, and a fair steamer; but in an age when the science of artillery makes such rapid strides, it is very doubtful whether such ships will be worth constructing in the long run.—The revolution in artillery which the rifled gun is now effecting appears to be a far more important matter for naval warfare than any thing that can be effected by steel-plated ships. Every rifled gun that deserves the name gives such a precision at long ranges that the ancient inefficiency of naval firing at such ranges appears to be fast becoming a matter of the past. Moreover, the rifled cannon, by admitting elongated shot and reduced charges, allows a considerable reduction in the bore and weight of broadside guns; or otherwise, the bore remaining the same, gives results far greater. The elongated shot from a 56 cwt. rifled 32-pounder will surpass the round shot from a 113 cwt. smooth-bore 10-inch gun, not only in weight, but also in penetration, range, and precision. The power of attack of every vessel is at least tripled if it be armed with rifled ordnance. Moreover, the great desideratum has always been to invent a useful percussion shell which should explode the very moment it penetrates a ship's side. The rotation of round shot has rendered this impracticable; the percussion fuze was not always in the proper position when the shell struck, and then it did not go off. But an elongated shot from a rifled cannon, rotating round its longitudinal axis, must always strike head foremost; and a simple percussion cap on the fuze head bursts the shell the moment it enters the ship's side. It is not probable that any steel-clad ship yet invented can brave two such broadsides from a two-decker with impunity; not to speak of the shells which enter the ports and must explode between decks. Rifled ordnance must to a great degree put a stop to such close-fought actions as were those in which carronades could be useful; manœuvring will once more regain the ascendant; and as steam now makes the contending vessels independent of wind and tide, naval warfare will in future much more approach the method and be subject to the tactics of land battles.—The vessels of war of which modern navies are composed are classed in various ratings, from first to sixth rates; but as these ratings are both variable and arbitrary, it will be better to class them in the common way as ships of the line, frigates, sloops, brigs, schooners, &c. Ships of the line are the largest men-of-war afloat, destined to form the line of battle in a general action, and to decide the struggle by the weight of metal thrown into the enemy's ships. They are either 3-deckers or 2-deckers; that is to say, they have either 3 or 2 covered decks armed with guns. These decks are called the lower, middle, and main or upper deck. The upper deck, which was formerly covered in at the quarter deck and forecastle only, is now covered in by a continuous open deck from stem to stern. This open deck, which is still called the quarter deck and forecastle (the position amidships being called the gangway), also carries artillery, mostly carronades; so that in reality a 2-decker carries 3, and a 3-decker 4 tiers of guns. The heaviest guns are, of course, placed on the lower deck; and the guns become lighter in proportion as the batteries are more elevated above the water. The caliber being mostly the same, this is obtained by reducing the weight of the guns themselves, in consequence of which those on the upper decks can only stand reduced charges, which implies that they can be used only at shorter ranges. The only exception to this rule is in the case of chase guns, which are placed at the bow and stern of a ship, and which, even if placed on the forecastle or quarter deck, are still as long and heavy as possible, as they are required to act at the longest ranges practicable. Thus, the bow and stern guns of English ships of the line are composed either of 8 or 10-inch shell guns, or of 56-pdr. (bore 7.7 inches) or 68-pdr. (bore 8.13 inches) solid shot guns, one of which is placed on the forecastle on a traversing platform. There are in the English navy generally 6 stern and 5 bow guns to a first rate; the remaining armament of such a ship is as follows:

Position.	Description.	W'ght.	Length.	No.
Lower deck......	8-inch shell guns.'	65 cwt.	9 ft. 0 in.	4
" "	32 pounder guns.	56 "	9 6	28
Middle deck......	8-inch shell guns.	65 "	9 0	2
" "	32-pounder guns.	50 "	9 0	32
Upper deck.......	" "	42 "	8 0	34
	" "	45 "	8 6	6
Forecastle and quarter deck.	" carronades	17 "	4 0	14
Total..........	....	....	....	120

The armament of the smaller ratings of vessels of the line is arranged upon the same principle. For the sake of comparison, we also give that of a French first rate, viz.: lower deck, 32 long 30-lb. guns; middle deck, 4 80-lb. shell guns, and 30 short 30-lb. guns; upper deck, 34 30-lb. shell guns; forecastle and quarter deck, 4 30-lb. shell guns, and 16 30-lb. carronades; in all, 120 guns. The French 80-lb. shell gun has a larger bore than the 8-inch English gun by 0.8 inch; the 30-lb. shell gun and the 30-lb. gun have a slightly larger bore than the English 32-pdr., so that the advantage of weight of metal would lie with the French. The smallest ship of the line now carries 72 guns; the largest frigate carries 61. A frigate is a ship with only one covered deck carrying guns, and another open deck above it (forecastle and quarter deck) which is equally provided with guns. The armament, in the English service, is generally of 30 guns (either all shell guns or part shell guns and part long 32-pdrs.) on the gun deck, and 30 short 32-pdrs. on the forecastle and quarter deck, with a heavy pivot gun on a traversing platform at the bow. Frigates being mostly sent on detached service, where they are always likely to become engaged single-handed against hostile frigates sent on the same errand, it has been a great point with most naval nations to make them as large and powerful as possible. In no class of vessels is the increase in size so remarkable as in this. The United States, requiring a cheap navy strong enough to enforce respect, were the first to see the great advantage to be drawn from a fleet of large frigates, each of them superior to any frigate which other nations could bring against it. The superiority of the American ship builders in producing swift vessels was also taken advantage of, and the last war against England (1812-'14) showed in many well contested engagements what formidable antagonists these American frigates were. Up to the present day the U. S. frigates are considered models of this class of vessels, although the difference in size when compared with other navies is not by far so marked as it was 30 or 40 years ago. The next class of men-of-war are called corvettes. They have but one tier of guns, placed on an open deck; but the larger class are provided with a forecastle and quarter deck (not connected, however, by a continuous deck amidships), where they carry a few guns more. Such corvettes, therefore, almost correspond to what a frigate was 80 years ago, before the two elevated extremities of the vessel were connected by a flush deck. These corvettes are still strong enough to carry the same caliber of guns as the larger vessels. They also carry 3 masts, all square-rigged. Of smaller vessels, brigs and schooners carry from 20 guns to 6. They have but two masts, square-rigged in brigs, fore-and-aft rigged in schooners. The caliber of their guns is necessarily smaller than that of the larger ships, and does not generally exceed 18 or 24-pdrs going down as low as 12 and 9-pdrs. Vessels of this small power of offence cannot be sent where serious resistance is anticipated. In European waters they are becoming generally superseded by small steamers, and they can be of actual service only on such coasts as those of South America, China, &c., where they have to meet powerless antagonists, and where they merely serve to represent the flag of a powerful naval nation. The armaments given above are merely those adopted at present, but they will undoubtedly be changed in every respect during the next 10 years by the general adoption of rifled ship guns.—The origin of the navy of the United States may be said to date from Oct. 13, 1775, when congress authorized the equipment of two cruisers mounting respectively 10 and 14 guns. Before the end of that year, 15 more vessels, of from 20 to 36 guns, were authorized. These vessels were built in the colonies of New England, and in New York, Pennsylvania, and Maryland. On Dec. 22, 1775, congress appointed a corps of naval officers, of whom Esek Hopkins was commander-in-chief, and John Paul Jones was a lieutenant. The affairs of the navy were at this time intrusted to the management of a "marine committee." In Oct. 1776, the navy consisted of 26 vessels, mounting 536 guns, and its services throughout the revolutionary war were most important. In 1778 several vessels of considerable force were built or purchased for the navy; among these was the celebrated Alliance, a frigate of 32 guns. The first vessel of war taken by an American cruiser in battle was the Edward, which was captured by the Lexington, Capt. John Barry, on April 17, 1777. On March 27, 1794, congress authorized the construction of 6 frigates, and it was fortunately decided that 3 of them should be of a very heavy class; the Constitution is one of these ships. This step laid the foundation of the present navy, the vessels of the revolution having been disposed of at the end of that contest, in 1783. In 1798 the navy department was formally created, and Benjamin Stoddart appointed the first secretary. At this time, urged by the depredations of France upon our commerce, and warned by the conduct of the Barbary powers, congress authorized a considerable increase of the navy, which the president was empowered to use for defence against the French. In the quasi war with France which resulted, our naval successes were marked. Upon the accession to office of Mr. Jefferson in 1801, the navy was reduced. In the same year war was declared by Tripoli against the United States, and continued until 1805. The naval achievements of these 4 years gave a high character to the American service. In 1803 the "gun-boat system" was inaugurated. In 1806 and 1807 the number of gun boats was rapidly increased, congress having authorized the construction of 257 of these vessels; they were afterward found, however, to be expensive and inefficient, and the system was soon abandoned. During the war of 1812 the navy obtained a vast increase of reputation. The superior force of the frigates of 1794 was evinced in their almost uniform success in action with an enemy hitherto deemed invincible on the ocean. The policy of maintaining an efficient navy was now considered settled; and although, compared with the navies of other nations, that of the United States is very small, the aim has always been to keep pace with the improvements of the day, and to have none but the most efficient ships of their class in the service. The navy of the United States now comprises 47 sailing vessels and 36 steamers; of the latter, 6 are screw frigates of the very heaviest class.

APPENDICES

(See Introduction, Section 6, for notes on each appendix.)

I. THE FIVE DUBIOSA

ABENSBERG, a small town with 1,200 inhabitants, in the circle of Regen, kingdom of Bavaria. It is believed to have been the Abasinum of the Romans. There is a thermal spring in the neighborhood, with the ruins of a fine castle. On April 20, 1809, Bonaparte fought and defeated the Austrians near Abensberg, who lost twelve guns and 13,000 men. This victory was the precursor of the victories of Landshut and Eckmühl, and opened the road to Vienna.

BROWN, Sir George, a British general, was born in August, 1790, at Linkwood, near Elgin, Scotland. He entered the army Jan. 23, 1806, as ensign in the 43d regiment of foot, and, as lieutenant in the same regiment, was present at the bombardment of Copenhagen; served in the peninsular war, from its beginning in 1808 to its close in 1814; was severely wounded at the battle of Talavera, and one of the forlorn hope at the storming of Badajoz. He was appointed captain in the 85th regiment, June 20, 1811; in Sept. 1814, he was a lieutenant-colonel in Major-General Ross's expedition to the United States, and took part in the battle of Bladensburg, and the capture of Washington. He was appointed commander of a battalion of the rifle brigade, Feb. 6, 1824; colonel, May 6, 1831; major-general, Nov. 23, 1841; deputy adjutant-general in 1842; adjutant-general of the forces in April, 1850, and lieut.-general in 1851. During the Crimean campaign, he led the English light division at the battle of Alma and the battle of Inkerman, and took the command-in-chief of the storming party in the first unsuccessful attack on the Redan. Among the allied armies he became distinguished as a martinet; but, by his personal prowess, and the strict impartiality with which he held the young aristocratic officers to all the duties of field discipline, he became popular among the common soldiers. In 1855 he was created a knight commander of the Bath, and April 2, 1856, gazetted "General in the army, for distinguished service in the field."

BÜLOW, Friedrich Wilhelm, Count von Dennewitz, a Prussian general, born Feb. 16, 1755, died Feb. 25, 1816. At the earliest period of Napoleon's European wars, he was engaged against him. In 1808 he was made a general of brigade. In 1813 he was ennobled for his victories at Möckern, Luckau, Gros-Beeren, and Dennewitz. He subsequently distinguished himself in Westphalia, Holland, and Belgium, and contributed essentially (as Wellington warmly acknowledged) to the victorious close of the battle of Waterloo, in which he commanded the 4th division of the allied army.

CARTOUCH, (Fr. *cartouche*), in old military works, used sometimes as synonymous with case or grape shot. It is also now and then used to designate the cartridge-box of the infantry soldier.

FULMINATES (Lat. *fulmen*, a thunderbolt), salts of fulminic acid and some base, as gold, platinum, silver, and mercury, all of which possess the property of exploding with more or less violence. The last two only are applied to any practical purpose. Fulminating mercury (represented by the formula $2Hg O, Cy_2 O_2$) is the compound used in the manufacture of percussion caps. It is prepared, as recommended by Dr. Ure, by dissolving at a moderate heat 1 ounce weight of mercury in 7½ fluid ounces of nitric acid of specific gravity 1.4, turning this into 10 fluid ounces of alcohol of specific gravity .83, the temperature of the acid and mercury being about 130° F. It is well to employ for dissolving the mercury a glass retort furnished with a receiver of glass, which is kept cool by a current of water. The acid vapors which are condensed in this should be returned to the retort. When the mercury is dissolved, the solution should be slowly introduced into the matrass containing the alcohol, the capacity of which should be at least 6 times that of the liquids. Bubbles of gas soon begin to escape from the bottom of the mixture, and the whole is soon thrown into a rapidly bubbling condition. It becomes frothy and white; highly combustible vapors escape, which should be allowed to pass off into the air without coming in contact with flame or any heated surface. These vapors consist of various products of the oxidation of the alcohol, as aldehyde, acetic acid, formic acid, and nitrous, acetic, and formic ethers. They may be condensed and converted to use in other operations; but any obstruction thus presented to their free escape is regarded as injuriously affecting the main object of the operation. A considerable quantity of them were condensed by Mr. Samuel Guthrie of Sackett's Harbor, N. Y., whose experiments will be noticed hereafter. The effervescence ceasing, the contents of the matrass are turned upon a double filter of paper, and thoroughly washed with pure cold water, till the washings cease to redden litmus paper. When quite drained, the filter is removed from the funnel, and spread open with its contents upon a plate of copper or stone ware, raised by steam or hot water to the temperature of 212° F. It is thus dried, and may then be put away in paper parcels of 100 grains each, which are to be kept protected from moisture. The salt when well prepared is in small sparkling crystals of brownish gray color, which moistened with water upon a slip of paper appear transparent. They dissolve in 130 times their weight of boiling water, leaving no residuum if pure. As the water cools, the fulminate reappears in pearly spangles. Fulminate of mercury explodes at a heat somewhat below 370° F., or by being struck smartly between two hard metallic surfaces. Rubbing it between two wooden surfaces will produce the same effect. When moistened with 5 per cent. of water, the portion struck may explode without communicating the effect to the portions in contact. Fulminate of mercury may be fired in contact with gunpowder without igniting this, even when covered loosely with it; but when the powder is packed in a tube and the fulminate in a percussion cap is exploded in contact with it, the gunpowder is more instantaneously ignited throughout than by any other mode of firing. The projectile effect of 10 parts as formerly fired is thus obtained from 8½ parts.—In the manufacture of percussion caps the French use 1 kilogramme of mercury to produce 1¼ kilogrammes of fulminate, which is sufficient for 40,000 caps. They grind the mercurial salt with 30 per cent. of water upon a marble table with a wooden muller, mixing 6 parts of gunpowder with 10 of fulminate. This when dried forms the composition which is introduced into the caps—about 1 grain to 4 caps. Dr. Ure recommends a solution of mastic in spirits of turpentine as the fittest medium for attaching the fulminate to the bottoms of the caps. Instead of using the fulminate alone, or with gunpowder, as practised by the French, the English mix with every 3 parts of it 5 parts of chlorate of potash, 1 part of sulphur, and 1 of powdered glass. Nitre is also recommended in the proportion of ⅜ of the fulminate, mixed with it when it contains 20 per cent. of water. Mr. Samuel Guthrie of Sackett's Harbor, N. Y., who performed a series of practical experiments on a large scale upon these compounds, found that a most efficient preparation was made by mixing 1 part of oxide of tin with 3 parts of fulminating mercury, and grinding them together with a stiff solution of starch. The starch gave cohesiveness to the grain without injuring its explosive qualities. Mr. Guthrie's experiments are recorded in the "American Journal of Science" for Jan. 1882. They are highly interesting for their practical character and applications, and the extreme hazard which attended them. It was in the course of these experiments that Mr. Guthrie made the discovery of chloroform, also discovered about the same time in France and Germany. The original fulminating powder, patented by the Rev. Mr. Forsyth in 1807, consisted only of chlorate of potash, sulphur, and charcoal. In the manufacture of percussion caps a drop of gum is introduced into the bottom of each one, and the fulminating powder is dropped in upon this. A coating of varnish is sometimes afterward applied to protect them from moisture. It was represented by an exhibitor at the London exhibition in 1851, that 1,300,000,000 caps were manufactured yearly for sporting guns in Europe, which involved a consumption of 396,000 lbs. of copper.—Fulminating silver $(2\,Ag\,O, Cy_2\,O_2)$ is prepared like fulminating mercury, except that the mercury is replaced by the silver, and the nitric acid solution is allowed to become cool before it is turned into the alcohol. Or it may be made by introducing fi [illegible] erized nitrate of silver into concentr [illegible] hol contained in a matrass, and after s[illegible] it well adding as much fuming nitric acid as there was alcohol. On boiling, the nitrate of silver is first dissolved, then decomposed, and a flocculent precipitate separates, which is formed of an agglomeration of little needles of fulminate of silver. When this ceases to form, water is added, and the mixture is filtered, the wa[illegible] being continued till there is no furthe[illegible]ion. The precipitate is then cautiously [illegible] This compound is so extremely dange[illegible] that its manufacture ought to be entirely abandoned. [illegible]s used only for explosive toys, which are made of little glass balls of the size of peas, into [illegible]h the fulminate is introduced in a moist [illegible] and dried. They are enveloped in a bit [illegible] paper, and when used are exploded [illegible] throwing them upon the ground. Mr. Guthrie [illegible]ations his having suffered severely from ex[illegible]ons in his experiments; and in 1832 Dr. [illegible] Hare was dangerously injured by the [illegible]on of a quantity of the feathery fulminate, [illegible] was nearly enough to fill an ounce bot[illegible] ignited as he was in the act of pouring it [illegible] on the face of a hammer, as he had frequently done before. The explosion could be accounted for only on the supposition that a particle of the powder might have been compressed between the neck of the vial and the face of the hammer. Three fingers of his right hand were broken, and his assistant and a pupil were also injured. An English chemist named Hennel is reported to have been not long since killed by the explos[illegible] about half a pound of the fulminate. He [illegible]s torn in pieces, and his limbs were thrown [illegible] different [illegible]tions. It is recommended never to keep [illegible] fulminates in glass vials, but in pasteboard [illegible] covered loosely with a card. They have been known to explode spontaneously, from no other cause apparently than a jarring motion in the room crowding the particles more closely together. An interesting paper by Prof. William H. Ellet upon the compound of cyanogen, including the fulminating salts, may be found in the "American Journal of Science" for July, 1830.—A compound is described as fulminating powder, into the composition of which fulminic acid does not enter. It is a mixture of 3 parts of nitre, 2 of dry carbonate of potash, and 1 of sulphur, the materials to be ground together in a warm mortar. If placed on a shovel over a fire, the compound melts at a temperature of about 330° and violently explodes. Another similar explosive mixture consists of 1 part of yellow prussiate of potash, 2 of chlorate of potash, and 1 of sugar well dried, the whole to be ground and then intimately mixed.

II. ENGELS' LIST OF 28 MAY 1857

ACRE, St. Jean d', Acca, Ptolemais, or Acco, a harbor of Syria, at the foot of Mt. Carmel, lat. 32° 54′ N. long. 35° 4′ E., population about 15,000. It is the best bay on that part of the coast, although very shallow. The place is renowned for its desperate sieges and defences. In 1104 it was taken by the Genoese, from whom Saladin retook it in 1187. The assault upon it by Richard Cœur de Lion in 1191 was one of the most daring feats in the Crusades. It remained until 1292 in the custody of the Knights of St. John, who fortified it strongly, but were compelled to evacuate it by the Turks. It was here that the Turks, supported by the chivalric Sidney Smith and a handful of British sailors, kept Napoleon and the French army at bay for sixty days, when he raised the siege and retreated. In 1832 Ibrahim Pasha, after a six months' siege, took it by storm when Mehemet Ali revolted from the Porte, and seized upon Syria. In 1839, however, Syria was restored to Turkey, and Acre again felt the bitterness of war, Ibrahim refusing to evacuate until after a bombardment by the combined British, Austrian, and Turkish fleets, Nov. 4, 1840.

ACTIUM (Ακτιον, now La Punta), a promontory and village in Acarnania, at the entrance of the Ambracian gulf, near which Cæsar Octavius, afterwards the Emperor Augustus, and Mark Antony, had a naval engagement, in which the former was completely victorious, Sept. 2, B. C. 31. This battle decided the question of universal dominion. Octavius had been master of the West, Antony of the East. Both armies were encamped on opposite sides of the Ambracian bay. Octavius had 80,000 men on foot, 12,000 horsemen, and 260 ships of war. Antony had 100,000 foot soldiers, 12,000 horsemen, and 220 ships. Antony's ships were armed with catapults, but were cumbersome. Those of Octavius were small, but had more speed. Cleopatra reinforced Antony with 60 ships, and at her instigation, and against the advice of his own most experienced captains, he offered a naval battle to Octavius. It was accepted. Agrippa, the admiral of Octavius, after the battle had lasted several hours without decisive effect, made a rapid manœuvre, and Cleopatra took flight with her galleys. The voluptuous Antony could not refrain from following her with a few ships. His fleet, on being deserted by its leader, surrendered, and his army did the like after waiting seven days for his return. The miserable man had fled with his mistress into Egypt. The conqueror, to commemorate his victory, beautified the temple of Apollo which stood at Actium, and erected Nicopolis (city of victory) on the northern side of the gulf.

ALAND ISLANDS, a group of about 200 rocky islets, of which 80 are inhabited, situated at the entrance of the Bothnian gulf, between lat. 59° and 60° 32″ N. and long. 19° and 21° E. They belong to Russia, having been ceded by Sweden in 1809, and form a part of the government of Abo, in Finland. The population, about 15,000 in number, are of Swedish descent, and are excellent sailors and fishermen. The rocks, covered with a thin soil, produce pines and birches, rye, barley, potatoes, hops, flax, and the inhabitants keep great numbers of cattle, and export cheese, butter, and hides; they also manufacture cloth for home use and for sails. The chief island is named Aland; its area is 28 square miles, its population 10,000; it has a good harbor on the W. side. All the harbors are more or less fortified; foremost among these was the island and harbor of Bomarsund, taken and blown up in 1854 by the allied fleets of England and France during their war against Russia. In 1714, the Russian admiral Apraxin won a decisive naval victory against the Swedes near the cliffs of Signilskar.

ALDENHOVEN, a small town in Rhenish Prussia, on the road from Jülich to Aix-la-Chapelle, has given its name to a victory of the Austrians under Coburg, over a part of the French army of Dumouriez, March 1, 1793. After the conquest of Belgium, in 1792, Dumouriez, meditating an invasion of Holland, left 70,000 men between the Maes and the Roer, to besiege Maestricht and Venloo and to cover these sieges, while, with the remainder of the army, he advanced from Antwerp into Holland. The troops on the Maes were necessarily much dispersed; the divisions covering the sieges were cantoned near Aix-la-Chapelle, Aldenhoven, and Eschweiler. Coburg collected 40,000 men, and marched in 2 columns on the 2 latter places, turned the position of Eschweiler, took that of Aldenhoven by a front attack, and threw the French in disorder on Aix-la-Chapelle, which place was taken on the next day. Maestricht was delivered, and the Austrian advanced guard followed the French even across the Maes, and beat them at Tongaes. The dispersed French divisions did not rally before arriving at Tirlemont, where they waited for Dumouriez. Thus the road into Belgium was open to the allies, and the conquest of the country completed, a few days afterward, by the further victory of Neerwinden. The loss of the French during the battle of Aldenhoven, and the pursuit, cannot have been less than 10,000 in killed, wounded, and prisoners, besides 10,000 who deserted immediately afterward; a great amount of *materiel*, too, fell into the hands of the Austrians.

ALESSANDRIA. I. A division of Piedmont, containing about 550,000 inhabitants, growing maize, wine, silk, madder, and flax. II. A fortified city in Piedmont, situated on the confluence of the Bormida and Tanaro, a few miles from the Po. It was founded in 1178 by the Milanese, as a bulwark against the invasions of the German emperors, and has in modern times again received significance as a national Italian fortress against Austria, since the campaigns of 1848 and '49. Though up to the beginning of this century its fortifications were but old-fashioned and indifferent, the French in vain besieged it in 1657, and Prince Eugene of Savoy, in 1707, only took it after a protracted defence. The principal strength of the fortifications as they at present exist, consists in the additions made by Napoleon after the annexation of Piedmont to France. It is the only fortress Napoleon built, and in its works Montalembert's new system of casemated batteries for the defence of the ditch, was applied for the first time, though only partly. Napoleon especially strengthened the citadel, a six-fronted bastioned work, with many outworks, and constructed a bridge-head on the opposite side of the Bormida. The Piedmontese government has recently resolved to add more works to the fortress, which, if the passage of the Po at Valenza were properly fortified, might become the nucleus of a vast entrenched camp in a commanding position. The city has a college, theological seminary, 13 churches, including a cathedral, and manufactories of linen, silks, cloths, and wax candles. Population, with the suburbs, 36,000.

ALMEIDA. I. A town of Portugal, in the province of Beira, between the rivers Coa and Duas Casa. Population, 6,200. It is strongly fortified, and was the scene of the defeat of the French, under Massena, by the duke of Wellington, Aug. 5, 1811.

AMUSETTE, a small light cannon carrying a ball of one pound weight, and formerly used for service in mountainous countries. This gun was highly esteemed by Marshal Saxe, but has now gone entirely out of use.

ANGLESEY, Henry William Paget, marquis of, a British general, born May 17, 1768, died April 29, 1854. He was the first of the title, his father having been earl of Uxbridge. He received his education at Westminster and at Christ church, Oxford. In 1793 he raised a regiment at his own expense among his father's tenantry in Staffordshire, with which he served in the campaigns in Flanders and Holland. He was an officer throughout the Peninsular war. In 1808 he joined Sir John Moore. He defeated the enemy at Mayaga, and repulsed the French advanced guard at Benvento, where he took General Lefebvre prisoner, and covered Sir John Moore's celebrated retreat, which ended in the battle of Corunna. At Waterloo, where he commanded the heavy cavalry, he headed the terrible British charge that annihilated the French cuirassiers. In this action he lost a leg. In consideration of his public services he was created Marquis of Anglesey. During the trial of Queen Caroline, wife of George IV., he advanced strong opinions (possibly embittered from his own domestic troubles) adverse to the general feeling. Upon one occasion he was surrounded by a crowd, who insisted on his shouting for the queen. He reluctantly yielded, and called out, "Well then, the queen, and may all your wives be like her!" In 1827, whilst Canning was premier, he became master-general of the ordnance, and in 1828 lord-lieutenant of Ireland. In these offices he was extremely popular from the impartiality of his administration, whilst his firmness secured him the respect of all. In 1828, in a letter to Archbishop Curtis, the Roman Catholic primate of Ireland, he expressed opinions so favorable to Catholic emancipation, that his recall became necessary, and he quitted Dublin Dec. 19, 1828, amid the universal regret of all classes; but on the passing of the emancipation act, he was restored to his post, from which he retired in 1835. In 1846 he again became master-general of the ordnance. He was popular with the people, both for his conspicuous connection with a great historical epoch, and for his estimable personal qualities. He continued in the discharge of his parliamentary duties in the house of lords until the time of his death, and his stately figure riding down to the house, will be long remembered. He married in 1795 the daughter of the fourth earl of Jersey, but was divorced, and again married in 1810 to the daughter of the first earl of Cadogan. He had a numerous issue, and was succeeded by his eldest son Henry.

ARBELA, now Arbil or Erbil, a small village in Koordistan, which lies on the usual route between Bagdad and Mosul in 36° 11′ N. lat. according to Niebuhr's observations. The houses are built of sun-dried bricks. Arbela was the name of the third and last of the great battles fought between Alexander and Darius 331 B. C. The battle was not actually fought at Arbela, but at a little place 36 miles west by north, called Gaugamela, now Karmeles. After the battle Alexander crossed the Lycus and rested at Arbela.

III. THE THREE REJECTS

AUGEREAU, Pierre François Charles, marshal of the French empire, duke of Castiglione, born Oct. 21, 1757, died June 12, 1815. He was the son of a grocer of Paris, and at an early age entered the Neapolitan army, in which he continued a private until he was 30 years of age, when he quitted the army, and settling at Naples, gained his livelihood by teaching fencing; until, being suspected of revolutionary principles, he was ordered to quit Italy. Entering the republican army of the south, after the revolution, he rose rapidly from grade to grade, by the sheer dint of intrepidity; for he had no military genius, if he had even military talents, which seems to be doubtful—other talent he certainly had none. His manners were rude, coarse, unpolished, almost to the verge of brutality; his avarice was so greedy and shameless, that it passed into a proverb with the army. He was close, sudden, and treacherous, which last quality of his character he showed by betraying two monarchs, within but a few months; and his insolence to the fallen emperor, after his banishment, called forth the scorn and reproach of Napoleon's very enemies. His courage was his only virtue, and that partook, in some degree, of the brutal character of a bull-dog's pluck, rather than of the considerate courage of a calm and high-minded man; he but once displayed talent and skill at Jena, and that so unexpectedly, that the consequences were considered the result of accident, rather than of well-planned strategy. In 1794, he was made brigadier-general in the army of the eastern Pyrenees, and afterward general of division. On the peace with Spain, he was appointed to the army of Italy, and in it served in all its campaigns under Bonaparte. At Lodi, he distinguished himself, but it was after the repulse of the officers in command of his rear at Valette, that he assailed and stormed the position of Castiglione, in a style, and with a degree of intrepidity, which Napoleon never forgot. In the overthrow of the directory, on the 18th Fructidor, he played the part of Bonaparte's tool, in expectation of the succession of one of the expelled directors; but, being disappointed of his expectations, he affected the severe republican, and on the general's return from Egypt, held aloof from him, until after the revolution of Brumaire, when he was the foremost in the worship of the rising sun. Shortly after the establishment of the empire, he was rewarded with the baton of a marshal, and created duke of Castiglione. In the wars with Austria and Prussia, he greatly distinguished himself, especially at Jena. At Eylau, he displayed unbounded heroism; for, being so ill with a fever that he could hardly sit upright, he compelled his servants to tie him to his saddle, and thus led his column into the thickest of the fight. Being wounded, however, he was compelled to fall back, his men were thrown into disorder, and Napoleon, forgetting the gallantry of the attempt, in the failure of the result, sent him home in disgrace. He was still in disgrace, and unemployed, during the Russian expedition, but subsequently distinguished himself at Leipsic; and when France was invaded in 1814, was intrusted with the defence of Lyons, which he pledged himself to make good to the last; but failing, through want of means, to make good his word, he was unjustly subjected to public censure, and again disgraced. While in retirement at Valence, a proclamation appeared in his name, stigmatizing the emperor as "an odious despot, and a mean coward, who knew not how to die as becomes a soldier;" and, although the authenticity of the document has been denied by his defenders, Napoleon believed in its truth. It is yet doubtful whether this proclamation was issued with the marshal's consent or not, but the weight of the evidence, together with his subsequent conduct, confirms, rather than invalidates the charge. On the passage of Napoleon to his seat of exile in Elba, the fallen monarch met his ex-marshal, on the road near Valence; and both descending from their carriages an interview followed, in which it was observed that Augereau had the bad taste, if not brutality, to wear his helmet in presence of the master to whom he owed all his honors; and which terminated in an altercation discreditable to both parties. On the restoration of Louis XVIII., Augereau gave in his adhesion, received the cross of St. Louis, the command of the 14th division, and was appointed a peer of France. On the return of Napoleon from Elba, he remained inactive until the emperor was actually in Paris, when he would have returned to his eagles, but Napoleon would not trust him, and he received neither command in the army nor seat in the senate. On the second restoration of the Bourbons, he would again have made his peace with Louis, but finding no encouragement, retired to his seat at Houssaye, where he died of dropsy in the chest.

AUSTERLITZ, a town of Moravia, in the circle of Brünn, 12 miles E. S. E. from Brünn, the capital of the district and circle. This little town owes its celebrity to the battle won by Napoleon, over the united Austrian and Russian armies, Dec. 2. 1805. On Nov. 13, of that year, Vienna, which had never yet yielded to an enemy, was entered by Gen. Sebastiani, with a brigade of dragoons, supported by Murat, Lannes, and Bertrand, at the head of a powerful force of grenadiers. By a stratagem conducted with intrepidity and coolness, which would have been admirable, had it not been stained by more than a suspicion of a breach of faith, these generals made themselves masters of the bridge of Thabor, which had been lined with combustibles, trains laid and matches lighted, ready for instant conflagration, and thus placing themselves *a cheval* on the Danube, destroyed the effect of the masterly movements of Kutusoff, who was no longer protected in his rear by the Danube, but was forced to retreat, if retreat were possible, on the second Russian army, in the presence of an enemy 4 times superior to his own force. Delighted with the success of their stratagem of the bridge of Thabor, by means of a pretended armistice, Murat endeavored to play the same game, a second time, on the wily Russian; but he turned the game on the inventors, and by pretending to fall into the snare extricated his whole force, with the exception of a rear-guard of 8,000 men, under Bagration, whom he left to check the French, exposed to their whole power, while he with his army defiled rapidly to the rear and gained the important post of Znaim, where he was joined by Bagration, bringing in 5,000 men, after fighting the whole French army, during a whole day and half a night, at Hollabrunn and Guntersdorf, where he left 3,000 dead on the field. The remainder of the month was consumed, by both parties, in almost unparalleled efforts to reinforce and concentrate their armies; and, at its close, the allied Austrian and Russian armies had effected their junction at Wischau, to the number of 104 battalions and 159 squadrons, presenting a grand total of 75,000 men. In addition to these, a division under the grand duke Constantine, and a strong corps under Benningsen, were hourly expected, which would have raised the allied forces to 90,000 men, while it was known that Prussia was arming, and that in a few days the French communications would be menaced by the appearance of troops of that nation on the Danube. At this time, the French army was but little over 50,000 strong, and when Constantine's reinforcements had joined the allies, had they acted with vigor, Napoleon would have been in great danger. But their movements were slow and vacillating; Napoleon also was reinforced, so that his army amounted to 70,000 men, at the moment when the Austro-Russian army determined to attack him. In this emergency Napoleon evacuated the town of Austerlitz, and concentrated his whole force round Brünn, retiring his right wing, as if fearful of an attack in that quarter, in the hope of inducing the enemy to quit his commanding station, on the heights of Pratzen, in which case he felt certain of taking him at disadvantage. Accordingly, on Dec. 1, with the first dawn of morning, to his inexpressible delight, the great leader saw the enemy descending into the valley and moving deliberately in a flank march of 5 massive columns, across or around his whole position, in order to attack his left wing. The French army occupied a concentric semicircle of heights, partially covered by wooded eminences, villages, and a chain of fish ponds, morasses, and little lakes. The left wing was commanded by Lannes, Bernadotte, and Oudinot, with the cavalry of Murat, and the imperial guard, under Bessières, in reserve. Soult held the centre, which was immensely strong; and Davoust, who had been brought up with great difficulty from Hungary, commanded the right, which was thrown back in a great semicircle to the lake of Mœnitz, and had his reserves at the abbey of Raygern in the rear. All day long Napoleon watched the enemy with an eagle eye, as by crowding the heights of Pratzen with their glittering masses they endeavored to conceal their general movements around his front, in order to attack his right wing in overwhelming force. But, when the sun set, he was assured that he had them in the hollow of his hand; and, as was his wont, he rode through his camp addressing his men with those words of fire, which none knew so well to utter, and dictated one of those magical proclamations, which, if they appear to us, when read in the closet, wordy and bombastic, stirred the souls of his soldiers, and rendered them invincible. During the night, which was the first anniversary of his coronation, the soldiery, wrought up to the highest possible pitch of excitement, celebrated the event by making huge bonfires of the straw of their bivouacs and the wood of their huts, and the hours of darkness were spent in tumults of joy, and amid the anticipations of certain victory. When the sun rose, bright and cloudless, that "sun of Austerlitz," which so often furnished Napoleon with a theme for his bold and sublime apostrophes, the ruin of the enemy was apparent to all eyes. The heights of Pratzen, the key of their position, were utterly deserted, and their huge and massy divisions were toiling in columns of march, around the whole front of the concentrated French semicircle, intent on turning the right wing of Napoleon, who had only to launch out masses in all directions, like radii from a common centre, in order to attack the enemy in flank, and at the utmost disadvantage, on all points simultaneously. It appeared as if no number, no severity of defeats, could teach the allies, that they were dealing with one in whose presence to make one false move was to be annihilated. The marshals saw the advantage, and besought the emperor to give the signal for action without delay. But his keener eye, while it saw all that they saw, perceived that the decisive moment was not yet. The half-committed blunder might possibly have been retrieved, and he waited. "When the enemy is making a false movement, gentlemen, we must take care not to interrupt him. We will wait 20 minutes." Before that time had elapsed, the faulty movement was complete; the roar of the Russian guns was heard from the extreme French left; and an aide-de-camp galloped up, with tidings that Davoust was hard pressed in the village of Sokolnitz. "Now is the time," said Napoleon, ordering his marshals to their posts, and to commence the attack on all points; while, mounting his horse, he exclaimed, "Soldiers, the enemy has imprudently exposed himself to your blows, we shall finish the war with a clap of thunder!" And so it was. Soult's centre instantly forced, carried, and held the heights of Pratzen, in spite of the most desperate efforts of Kolowrat and Kutusoff to retake it. Bernadotte and Lannes, simultaneously, fell on the Russian right, taking it utterly by surprise; and, although the Austrian cuirassiers in that quarter, and the Russian cuirassiers of the imperial guard, led by Constantine in person, in the centre, made a desperate effort to retrieve the day, and, for awhile, were successful, so soon as the French reserves of the imperial guard came up, under Rapp and Bessières, all was over. The centre was pierced through, and driven completely off the field, in confusion. The carnage and disorder were hideous; and, to increase both, the icy surface of the frozen morasses and lakes, across which the fugitives were attempting to escape, broke, partly from the weight of the artillery and the pressure of the columns, partly from the effect of the French shells bursting under it; and above 2,000 men perished in the waters. Meantime, with characteristic obstinacy, Davoust, though sore pressed on the French right, had held out, until, the Russian centre and right being annihilated, or pushed off the field, Napoleon directed Soult, from the victorious centre, and all the reserves of the imperial guard, to wheel upon the rear of the Russian left, which had been thus far successful. It was a portion of this force which, while endeavoring to reopen its communication with its own centre, perished in the frozen lakes, as just related. The ruin of the whole army was now complete; and the last stroke was the breaking of Murat's cavalry, and the infantry of Suchet, into the retreating masses of this last force, dislodging it from the road to Olmutz, and capturing all its artillery and baggage. The loss of the allies was immense; above 10,000 men were left on the field; above 20,000 were prisoners; 185 guns, 400 caissons, and 45 standards were the trophies of the battle. Its fruits were the close of the campaign; the peace of Presburg; the subjugation, for the moment, of all northern Europe; and the death of William Pitt, who died, almost broken-hearted, at the apparent failure of all his efforts. Austerlitz is justly considered as one of Napoleon's greatest victories, and the strongest proof of his surpassing military genius; for although the errors of the allies were doubtless its primary cause, the *coup d'œil* which detected the blunder, the patience which abided its time for the completion, the decision which struck the crushing blow, and the lightning swiftness which consummated the ruin, were beyond praise, almost beyond admiration. Austerlitz was a miracle of strategy, and will not be forgotten until wars have ceased to be.

BADAJOZ, a town and fortress of Spain, the capital of Estremadura, on the river Guadiana, 82 miles N. N. W. of Seville, and 49 S. of Alcantara; pop. about 15,000. It is especially celebrated for its events during the peninsular war. The first of these was the fearful massacre of May, 1808, on the breaking out of the general insurrection against the French. The governor, who wished to suppress the riot, was dragged out of his house, and murdered by the mob. On Feb. 5, 1811, when Massena was in full retreat, before Wellington, from the impregnable lines of Torres

Vedras, Soult took up his position before the walls of Badajoz, defended by the veteran, Menacho. Wellington made every effort to enable Mendizabel, the Spanish general, in the field, to raise the siege; and sent to him for that purpose, all the Spanish divisions of his own army, which rendered the Spaniards in the field, without taking the garrison into consideration, fully equal to the French force outside of the fortress. However Mendizabel, the Spanish commander, suffered himself to be surprised and cut to pieces with the loss of 8,000 men and all his artillery, a few escaping, with their general, into Elvas, while 3,000 threw themselves into Badajoz, which now had 9,000 men within the walls, and 170 guns. Unfortunately, however, Menacho was killed during a sally on the evening of March 2, the ramparts were partially breached, and although the breaches were impracticable while the French had but 6 guns in battery, one of which was dismounted, and while it was known that Beresford was on the march to relieve the garrison, at the head of 12,000 men, Imas, who had succeeded to the command of the place, shamefully surrendered it. This disaster, which the duke of Wellington described as, in his opinion, by far the greatest misfortune which had befallen the allies since the commencement of the peninsular war, occurred March 10, 1811; and immediately, as soon as the retreat of Massena was fully developed, Wellington determined to retake the stronghold of Badajoz. It was accordingly invested, May 5, 1811, and though there was not then in the British army a single corps of sappers and miners, nor a solitary private who knew how to conduct approaches under fire, the siege was begun with great alacrity. But before much had been accomplished, Soult came up from Seville, and the battle of Albuera was fought. After this battle, Wellington, who had come up in person, renewed the siege with the utmost vigor. On June 6, the breach was declared practicable, but on that day and on June 9, the British troops were repulsed in two several attacks, with prodigious loss; and Marmont and Soult coming up with vastly superior numbers, Wellington was reluctantly compelled to raise the siege, and retire into Portugal.—On the morning of Jan. 8, Wellington crossed the Agueda, and resumed the offensive, while the enemy were far aloof. After the capture of Ciudad Rodrigo, by storm, Jan. 18, 1812, Wellington turned his attention toward Badajoz, which he resolved to take by a similar *coup de main*. With great skill and subtlety, he contrived to deceive Napoleon himself, to whom all the details of the war were referred by telegraph, so completely that no steps were taken for the relief of the place, until the English siege artillery was actually before the walls. On March 15, the pontoons were thrown across the Guadiana, and on the 17th the investment of the fortress was completed. It was a place of great strength, most ably defended by Philippon, who by his former successful defence had become thoroughly acquainted with all its strength and weakness, and was admirably seconded in his defence, by a picked garrison of 5,000 men, the flower of the French armies, and whose resistance, although unsuccessful, crowned him with undying honor. On the 24th, as it was known that Soult was energetically striving to raise means for the relief of the place, the advanced post, called the Picurina, though not breached, was stormed and taken, with a loss of 350 men in the assault, which lasted but one hour, although Philippon was confident of making the fort good for 4 or 5 days, and delaying by so long the fall of the place. On the morning of April 6, the walls of the town itself were breached in 3 places, and the breaches were declared practicable, although the counterscarp remained entire, and prodigious efforts had been made to retrench the breaches, and to fortify the summit of the ruins, which were rendered impassable by huge beams bristling with sword blades, while the whole ascent was strewed with live shells, and honey-combed with mines, ready to explode under the feet of the assailants.—At 10 o'clock at night the assault commenced, by the most of 2 divisions, in all 10,000 strong, preceded by storming parties each of 500 men, with ladders and axes, led by their respective forlorn hopes, against the 3 breaches, while Picton, with a third division, was destined to storm the castle in the rear, during the progress of the main assaults. Nothing like the loss and carnage of that hideous midnight attack has been recorded in the history of war. The breaches were carried, amid the explosion of mines, the bursting of shells, the roar of ordnance, and the roll of musketry; but when the top was won, the retrenchments could not be forced, although the men confronted death in every form, and fought hand to hand with the French grenadiers across the barrier. After 2 hours of desperate fighting, in which 2,000 men had fallen within the space of a few hundred square feet—by Wellington's orders, the troops were ordered to retire, and reform for a second attack. But in the mean time, Picton, though he had been once repulsed, scaled the castle, which had not been breached at all, and which, even after it was in the hands of the enemy, Philippon could not believe to have been taken; while Walker, with a brigade of Portuguese, intended only to make a diversion by a false attack, scaled the bastion of Vincente, and, at the very moment when all was in confusion, disaster, and retreat, at the breaches, the English bugles, answering each other from the castle and the great square of the town, announced that the place was lost and won.—The breaches were abandoned; the garrison retreated across the Guadiana, into the adjoining fortress of San Cristoval, where they surrendered at discretion the next morning; the assailants, now unresisted, poured in by the breaches, by the gates, over the ramparts, and, maddened by their losses, and drunk with blood and the furious hour of battle, did deeds that night which might well make the angels weep, and which obscured, if they could not efface, the glory of their wonderful achievement.—Thus in 11 days of open trenches, and 19 of siege, the strongest place in Spain, with 120 heavy guns, and all its garrison of 3,800 men, with their governor, 1,500 having fallen during the siege, was taken, contrary to all the probabilities and chances of warlike fortune.—The conquerors lost 5,000 men and officers, including 700 Portuguese, during the siege; no less than 3,500 of whom (800 of them dead) were stricken down in the last assault. Still, fearful as was the price, it was not too dearly paid; since by the taking of Badajoz, the path was opened into the very heart of Spain, and the career of victory commenced, which only ended when the allied armies defiled through the streets of the French metropolis.

IV. THE AMERICAN CYCLOPAEDIA

From the American Cyclopaedia, Vol. 11, 1875

MARX, Karl, a German socialist, born in Treves in 1818. He completed his studies in Bonn and Berlin, and became in 1842 chief editor of the *Rheinische Zeitung* in Cologne. That journal being suppressed in 1843, he associated himself in Paris with Arnold Ruge in a critical revision of Hegel's "Philosophy of Jurisprudence," and with Friedrich Engels in the publication of *Die heilige Familie*, directed against Bruno Bauer and kindred writers. At the same time he attacked Prussia in the press, and at the request of that power he was expelled from France in 1846 and went to Brussels, where he and Engels published in 1848 a manifesto embodying the views of an international congress of workmen held at London in the preceding year; and he was then also expelled from Belgium. The revolution of 1848 enabled him to return to Paris and to Cologne, where he speedily founded the *Neue Rheinische Zeitung*, a revolutionary journal advocating the refusal of taxes as long as liberty was not established. His continued agitation involved him in perpetual conflicts with the authorities, and in 1849 he was expelled on account of his connection with the insurgents in the grand duchy of Baden. He once more went to Paris, and after the insurrection of June 13 to London, where he has since lived. He issued here in 1850–'51 a monthly edition of the *Rheinische Zeitung*, printed at Hamburg. In 1864 he was admitted as member of the newly established *Internationale*, and drew up the manifesto and statutes of this association, which were adopted in 1866 at the congress of Geneva, and henceforth he was officially recognized as the master spirit of that organization. (See INTERNATIONAL ASSOCIATION.) His principal works are: *Misère de la philosophie: Réponse à la Philosophie de la misère de Proudhon* (Brussels, 1847); *Zur Kritik der politischen Oekonomie* (Berlin, 1859); *Das Kapital: Kritik der politischen Oekonomie* (1859); and *Herr Vogt* (London, 1860), in which he accused Karl Vogt and his adherents of having sold themselves to Napoleon III.

From Appletons' Annual Cyclopaedia, 1883

Marx, Karl, a German socialist, died in London, March 15, 1883. He was born at Trier, May 2, 1818. His father was a lawyer. He studied law and philosophy at Bonn and Berlin, and was about to become a tutor at Bonn, when a chance acquaintance led him to enter the office of the radical "Rhenish Gazette," the direction of which he assumed in 1842. A year later the paper was suppressed. Marx went first to Paris to study the French political economists, and directed his attention at the same time to Hegel's philosophy of jurisprudence, on which he published a critique in 1844 in the "Franco-German Year-Book," edited by him and Arnold Ruge. Expelled from France, he settled at Brussels, where he published, in 1847, the first of his writings on economical questions, a polemic entitled "Misère de la philosophie," in answer to Proudhon's "Philosophie de la misère." In the same year, in conjunction with his Rhenish countryman, Friedrich Engels, who had studied for years the economical conditions of England, he set on foot the first and most famous of socialist congresses in London, at which the "Manifesto of the Communistic Party" was published. For this he was expelled from Belgium, and at the outbreak of the revolution returned to Cologne, where he edited—in association with Engels, Freiligrath, Hermann Becker, Albert

Wolff, later of the "Figaro," who furnished *feuilletons*, Ferdinand Lassalle, and others—the "New Rhenish Gazette." His acquaintance with Lassalle bore important fruits in the Social-Democratic movement in Germany, and the present social projects of the German Government. The journal called upon the people to refuse to pay taxes after the counter-revolution, and for this it was suppressed. Marx then fled to England, and devoted himself to the study of the conditions of labor in the line of research initiated by Engels. The effect of Marx's contributions to the science of political economy was marred by his revolutionary schemes to carry his theories into practice. In 1864 a socialist meeting was held in St. James's Hall, in London, at which socialism was declared to be communistic and international. A committee was appointed to draw up a plan of organization. In the committee Marx was the principal person. He drew up the statutes which were adopted at the Socialist Congress at Geneva in 1866 as those of the International Society, of which Marx remained, under the title of secretary, the head and acknowledged leader until 1872. A defection of the English members resulted in the victory of the Federalists, who advocated the organization of the labor movement on national lines. Marx consequently ceased his agitation. His principal work was "Capital" (1867), preceded by a "Critique on Political Economy" (1859). A second part of his great work, dealing with the distribution of wealth, while the first treated of production, was left in manuscript. Marx assailed the English school of political economy with great dialectical power, but in a polemical tone, which concealed the extent to which he assimilated the ideas of Adam Smith and the older writers. His wife was a sister of Minister von Westphalen, of the Prussian reactionary Cabinet headed by Manteuffel.

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V. TABLES

1. GENERAL INFORMATION TABLE

l. 1: *Author of article as ascribed in* MEW, *Vol.14. (E = Engels; M = Marx; M/E = Marx and* gels.) Col. 2: *List of articles in the* NAC *alphabetical order.* Col. 3: *Location of art-* le *in the* NAC, *by volume number and inclusive pagination.* Col. 4: *Location in* MEW, *Vol.* , *by inclusive pagination.* Col. 5: *Location in Russian* Sochineniia, *1st ed., by initial* ge number. Col. 6: *Location in Russian* Sochineniia, *2nd ed., by inclusive pagination.* l. 7: *Date the article was written, as given in* MEW. Col. 8: *This serial number repre-* nts *the order in which the articles are published in* MEW, *this being the chronological* der *in which they were written--with the exception of "Army," which leads off in* MEW *but* here *numbered chronologically like the rest.*

	Article	*NAC Vol.& p.*	*Ger. MEW*	*Russ. 1.ed.*	*Russ. 2.ed.*	*When Written*	
	Abatis	1:7	83		86	c.10 Aug. 1857	10
	Adjutant	1:127-128	49		51-52	bet.11 July & 10 Aug.1857	1
	Afghanistan	1:165-169	73-82	531	76-85	c.10 Aug. 1857	9
	Airey	1:256	60		63	bet.11 July & 10 Aug.1857	5
	Albuera	1:288	50-51		53-54	bet.11 July & 10 Aug.1857	2
	Algeria	1:348-351	95-106		99-110	c.17 Sept.1857	16
	Alma	1:393-394	52-56	540	55-59	bet.11 July & 10 Aug.1857	3
	Ammunition	1:483	107		111-112	c.17 Sept.1857	17
M/E	Armada	2:105-106	164-167	543	172-175	bet. end July & 23 Oct.1857	38
	Army	2:123-140	5-48	367	5-50	Aug.-24 Sept.1857	8
	Arquebuse	2:155	57-59		60-62	bet. 11 July & 10 Aug.1857	4
	Artillery	2:179-188	187-212	411	196-221	mid-Oct. - 26 Nov.1857	41
	Aspern	2:221-223	61-67	547	64-70	bet.14 July & 10 Aug.1857	6
	Attack	2:320-322	68-72	553	71-75	bet.14 July & 10 Aug.1857	7
M/E	Ayacucho	2:424	168-169		176-177	bet.21 Sept. & 23 Oct.1857	39
	Barbette	2:615-616	84		87	c.14 Sept.1857	11
M/E	Barclay	2:624-625	88-90	569	92-94	bet.10 & 15 Sept.1857	14
	Bastion	2:720-721	85-86		88-89	c.14 Sept.1857	12
E	Battery	2:741-743	122-124		127-129	c.28 Sept.1857	22
E	Battle	2:743-745	117-121	571	122-126	c.21 Sept.1857	21
E	Bayonet	2:771	87		90-91	c.14 Sept.1857	13
M/E	Bem	3:112-114	129-132	578	134-137	2nd half Sept.1857	26
M/E	Bennigsen	3:133-134	108-111	575	113-116	bet.10 & 22 Sept.1857	18
M/E	Beresford	3:161-162	284-285		294-295	begin'g March - 9 Apr.1858	63
E	Berme	3:175	244		253	c.28 Jan.1858	51
M	Bernadotte	3:177-181	154-163	582	161-171	bet.17 Sept. & 15 Oct.1857	37
M	Berthier	3:199-200	91-94	591	95-98	c.15 Sept.1857	15
M	Bessières	3:208-209	133-134		138-139	c.29 Sept.1857	27
E	Bidassoa	3:247-248	253-258	594	262-267	c.11 Feb.1858	54
E	Bivouac	3:303	125		130	c.28 Sept.1857	23
E	Blenheim	3:346	245-246		254-255	c.28 Jan.1858	52
E	Blindage	3:359	126-127		131-132	c.28 Sept.1857	24
M/E	Blücher	3:386-392	170-186	598	178-195	22 Sept. - 30 Oct.1857	40
M	Blum	3:396-397	112-114	614	117-119	22 Sept.1857	19
M	Bolivar	3:440-446	217-231	617	226-240	c.8 Jan.1858	43
E	Bomarsund	3:451	283		293	c.18 March 1858	62

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Wollf, later of the "Figaro," who furnished *feuilletons*, Ferdinand Lassalle, and others—the "New Rhenish Gazette." His acquaintance with Lassalle bore important fruits in the Social-Democratic movement in Germany, and the present social projects of the German Government. The journal called upon the people to refuse to pay taxes after the counter-revolution, and for this it was suppressed. Marx then fled to England, and devoted himself to the study of the conditions of labor in the line of research initiated by Engels. The effect of Marx's contributions to the science of political economy was marred by his revolutionary schemes to carry his theories into practice. In 1864 a socialist meeting was held in St. James's Hall, in London, at which socialism was declared to be communistic and international. A committee was appointed to draw up a plan of organization. In the committee Marx was the principal person. He drew up the statutes which were adopted at the Socialist Congress at Geneva in 1866 as those of the International Society, of which Marx remained, under the title of secretary, the head and acknowledged leader until 1872. A defection of the English members resulted in the victory of the Federalists, who advocated the organization of the labor movement on national lines. Marx consequently ceased his agitation. His principal work was "Capital" (1867), preceded by a "Critique on Political Economy" (1859). A second part of his great work, dealing with the distribution of wealth, while the first treated of production, was left in manuscript. Marx assailed the English school of political economy with great dialectical power, but in a polemical tone, which concealed the extent to which he assimilated the ideas of Adam Smith and the older writers. His wife was a sister of Minister von Westphalen, of the Prussian reactionary Cabinet headed by Manteuffel.

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E	Bidas
E	Bivou
E	Blenk
E	Blind
M/E	Blüch
M	Blum
M	Boli
E	Boma

	Article	*NAC Vol.& p.*	*Ger. MEW*	*Russ. 1.ed.*	*Russ. 2.ed.*	*When Written*	
E	Bomb	3:451-452	141-142		146-147	c.5 Oct.1857	30
E	Bomb Ketch	3:452	146		151	c.5 Oct.1857	33
E	Bomb-proof	3:452	148		153-154	c.5 Oct.1857	35
E	Bomb Vessel	3:453	147		152	c.5 Oct.1857	34
E	Bombardier	3:453	143		148	c.5 Oct.1857	31
E	Bombardment	3:453	144-145		149-150	c.5 Oct.1857	32
E	Bonnet	3:491	128		133	c.28 Sept.1857	25
E	Borodino	3:533-535	247-252	631	256-261	c.28 Jan.1858	53
M/E	Bosquet	3:543-544	135-136		140-141	bet.22 & 29 Sept.1857	28
M	Bourrienne	3:589-590	115-116	638	120-121	22 Sept.1857	20
E	Brescia	3:668	272-274		282-284	c.24 Feb.1858	60
E	Bridge, Milit	3:690-692	149-153		155-160	c.14 Oct.1857	36
E	Bridge-head	3:693	263-264		272-273	bet.23 & 29 Sept.1857	56
M	Brune	4:15-16	137-140		142-145	bet.23 & 29 Sept.1857	29
E	Buda	4:59-60	259-262		268-271	c.11 Feb.1858	55
M	Bugeaud	4:82-83	213-216	640	222-225	27 Nov.1857	42
E	Burmah	4:126-128	275-282		285-292	bet.begin'g Feb. & 8 Mar.1858	61
E	Camp	4:312-313	266-269		275-278	c.18 Feb.1858	58
E	Campaign	4:314	232-233		241-242	7 Jan.1858	44
E	Captain	4:411	234		243	c.7 Jan.1858	45
E	Carabine	4:412	235		244	21 Jan.1858	46
E	Carcass	4:423	240-241		249-250	c.21 Jan.1858	49
E	Carronade	4:489	236-237		245-246	c.21 Jan.1858	47
E	Cartridge	4:502	242-243		251-252	c.21 Jan.1858	50
E	Case Shot	4:511-512	238-239		247-248	c.21 Jan.1858	48
E	Catapult	4:552	265		274	c.18 Feb.1858	57
E	Cavalry	4:600-611	286-314	436	296-325	begin'g Mar. - c.21 June 1858	64
E	Coehorn	5:431-432	270-271	643	279-281	2nd half Jan. - Feb.1858	59
E	Fortification	7:612-623	315-339	492	326-351	May - c.9 June 1859	65
E	Infantry	9:512-522	340-367	466	352-379	Sept. - c.10 Oct.1859	66
E	Navy	12:143-149	368-380	517	380-394	c.22 Nov.1860	67

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Cartouch	4:502
Fulminates	8:5-6

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Alessandria	1:310
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2. M-E Correspondence — List

Following is a list of letters written by Marx or Engels on matters relating to the NAC *or to articles for it, for the period through 1861. The indexes in* MEW *(Vols. 14, 29-30) do not lead to as complete a list. The index to the older* Marx-Engels Gesamtausgabe, *Abt.3 (Marx-Engels correspondence) is even more incomplete with reference to the* NAC. *At the time the following list was drawn up, the publication of* MEW *was still unfinished, the last volume published being Volume 34. The page numbers listed in the third column, under the appropriate volume number, refer to* MEW, *& include only those passages referring to the* NAC. *In the main list, the first column contains either M-E (= Marx to Engels) or E-M (= Engels to Marx). In the supplementary list, "Letters to Other Correspondents," all the letters are by Marx and the first column gives the name of the recipient.*

	1857	Vol.29
M-E	21 Apr.	125
E-M	22 Apr.	126-128
M-E	23 Apr.	129-130
M-E	8 May	132
M-E	23 May	140
E-M	28 May	141-142
M-E	29 June	145
M-E	6 July	148-149
E-M	[11] July	151
M-E	16 July	156
M-E	24 July	157
E-M	21 Aug.	162,164
E-M	25 Aug.	167
M-E	26 Aug.	168-169
E-M	8 Sept.	170-171
E-M	10 Sept.	172
E-M	[11 or 12 Sept.]	173
M-E	15 Sept.	174
M-E	17 Sept.	176
E-M	18 Sept.	177-178
M-E	21 Sept.	179
E-M	21 Sept.	180-181
E-M	22 Sept.	183-186
M-E	23 Sept.	188
E-M	24 Sept.	191
M-E	25 Sept.	192-193
E-M	19 Oct.	196
M-E	20 Oct.	201
E-M	29 Oct.	202
M-E	31 Oct.	205
M-E	13 Nov.	207
E-M	15 Nov.	208,212
E-M	16 Nov.	214
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	1858	Vol.29
M-E	5 Jan.	247-248
E-M	6 Jan.	249
E-M	7 Jan.	251-252
M-E	11 Jan.	256
E-M	14 Jan.	257
M-E	[c.16] Jan. *(actually dated 14 Jan.)*	259
M-E	23 Jan.	262
E-M	25 Jan.	264
E-M	28 Jan.	266
M-E	29 Jan.	269
E-M	30 Jan.	271
M-E	1 Feb.	273-274
E-M	8 Feb.	276
M-E	10 Feb.	277
E-M	11 Feb.	278
M-E	14 Feb.	280
E-M	18 Feb.	282
M-E	22 Feb.	284-285
E-M	24 Feb.	287
M-E	2 Mar.	292
E-M	4 Mar.	295
E-M	11 Mar.	299
M-E	15 Mar.	300
E-M	[16 Mar.]	301
E-M	17 Mar.	305
M-E	19 Mar.	307
E-M	26 Mar.	308
E-M	22 Apr.	322
M-E	2 July	335
M-E	13 Aug.	352

	1859	Vol.29
M-E	9 Apr.	415
M-E	10 June	450
M-E	1 Aug.	467
E-M	3 Aug.	468
M-E	23 Sept.	483
E-M	[bet.23-27] Sept.	484
E-M	3 Oct.	488
M-E	10 Oct.	494

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	1860	Vol.30
M-E	25 Sept.	95
E-M	1 Oct.	98,99
M-E	2 Oct.	101
M-E	25 Oct.	107
M-E	23 Nov.	113

LETTERS TO OTHER CORRESPONDENTS

Marx to:	Date	Vol. & Page
Lassalle	10 June 1859	29:606
J'zrat Weber	24 Feb. 1860	30:474
Lassalle	15 Feb. 1861	30:584
Carl Siebel	28 Mar. 1861	30:592

3. M-E Correspondence——Index

This index includes references in MEW *to individual articles only, not to the* NAC *in general. All page numbers refer to Vol. 29, except in the case of "Navy" and "Artillery," where references to Vol. 30 are indicated. Included also are references to* MEW *notes on the articles: these are given in brackets, first the page number to which the note is appended, & then the note number. This is an index only to the articles as such; e.g., the entries under "Bernadotte" are to the article of that name and do not include references to Bernadotte in other articles.*

Abatis. [169 n.6].
Adjutant. 142, 151, [157 n.177], [169 n.177].
Afghanistan. 142, 151, [169 n.6].
Airey. 141, [157 n.177], [169 n. 177].
Albuera. 142, [157 n.177], [169 n.177], 262, 264, 282.
Algeria. 142, 151, 179.
Alma. 151, [157 n.177], [169 n. 177].
Ammunition. 151, 179.
Armada, Spanish. 141, 179, 196, [201 n.36].
Army. 148, 151, 156, [156 n.175], 164, 167, 170-72, 179, 183, 192-93, 205, 249.
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Artillery. 126, 151, 179, 196, 202, 205, 207-08, 214, 262, 277, 278; *Vol.30:* 101.
Aspern. 142, [157 n.177], [169 n. 177].
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Bidassoa. 264, 273, 292.
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Bourrienne. 168, 174, [179 n.4], 273.
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Carabine. 262, [262 n.248].
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Carronade. [262 n.248].
Cartridge. [262 n.248].
Case Shot. [262 n.248].
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Fortification. [415 n.356], 450.
Infantry. [415 n.356], 467, 468, 483, 484, 488, 494.
Navy. *Vol.30:* 95, 98-99, 107, 113.

4. Reference Works Used by M-E

This is a partial list of reference works, used in the writing of the NAC *articles, which are mentioned in the Marx-Engels correspondence and in* MEW *notes. Other titles are referred to in the Introduction in connection with specific questions.*

Blücher, Gebhard Leberecht, Fürst von. *Kampagne-Journal der Jahre 1793 und 1794*. Hrsg. von Emil Knorr. Hamburg, 1866.
---See reference under "Blücher," Introduction, Sec.5.

Bötticher, Wilhelm. *Geschichte der Carthager nach den Quellen bearbeitet.* Berlin, 1827.
---See reference under "Army," Introd., Sec.5.

Brockhaus' *Konversations-Lexicon.* Leipzig.
---See Introd., Sec.4, for Engels' letter of 22 April 1857. It is clear that Engels, like Marx, used Brockhaus extensively, with the result related under "Albuera," Introd., Sec.5.

Campbell, E. S. N. *A dictionary of the military science...* London, 1830.
---In response to Engels' request of 28 May 1857 for an English military encyclopedia (to see what headings begin with A), Marx informed him on 6 July that "There is a cheap 'Dictionary of Military Science' by Campbell."

Cathcart, George. *Commentaries on the war in Russia and Germany in 1812 and 1813.* London, 1850.
---Mentioned by Engels, 17 March 1858, as a book he had consulted for material on Bülow, with little result.

Charras, Jean Baptiste Adolphe. *Histoire de la campagne de 1815. Waterloo.* Leipzig, 1857.
---Engels asked Marx to get him a copy (letter of 11 March 1858).

Clausewitz, Carl von. *Hinterlassene Werke des Generals Carl von Clausewitz über Krieg und Kriegführung.* Band 7 (Berlin, 1835) for: *Der Feldzug von 1812 in Russland, der Feldzug von 1813 bis zum Waffenstillstand und der Feldzug von 1814 in Frankreich.* Band 8 (Berlin, 1835) for: *Der Feldzug von 1815 in Frankreich.* Band 1-3 (Berlin, 1832-34) for: *Vom Kriege.*
---Engels to Marx, 7 Jan. 1858: "I am now reading, among other things,

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Clausewitz's *Vom Kriege*. Singular way of philosophizing, but very good on the subject. On the question whether it should be called the art of war or the science of war, his answer is that war is most similar to trade. Combat is in war what cash payment is in trade: however seldom it need occur in actuality, yet everything is directed toward it and in the end it must take place and settle things." (This reference is to Book 2, Chap. 3 of *Vom Kriege*.) Marx commented, 11 January: "In connection with Blücher, I rummaged through Clausewitz a bit in general. The fellow has a common sense that borders on wit."

Douglas, Howard. *An essay on the principles and construction of military bridges, and the passage of rivers in military operations*. London, 1816.

Encyclopaedia Britannica.
---For Marx's comments, see "Army," Introd., Sec.5.

Ersch & Gruber. *Allgemeine Encyclopädie der Wissenschaften und Künste*. Hrsg. von Johann Samuel Ersch und Johann Gottfried Gruber. Leipzig, 1818-1890 (never completed).
---See reference under "Army," Introd., Sec.5.

Griesheim, Gustav von. *Vorlesungen über die Taktik*. Berlin, 1855.
---Engels' references indicate he used this at least for "Blücher" and "Cavalry."

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---See reference under "Army," Introd., Sec.5.

Mommsen, Theodor. *Römische Geschichte*. 3 vols., Leipzig-Berlin, 1854-56.
---Engels used material on Hannibal for his article "Cavalry."

Müffling, Friedrich Ferdinand Karl. *Passages from my life, together with memoirs of the campaign of 1813 and 1814*. London, 1853.
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---In a letter to Marx of 3 August 1859, Engels remarked that his article on Infantry "will cost me some toil and time, in spite of Rüstow, which in fact must be used somewhat critically."

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---See reference under "Bernadotte," Introd., Sec.5.

Siborne, William. *History of the war in France and Belgium, in 1815...* 3rd ed. rev., London, 1848.
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Wachsmuth, Wilhelm. *Hellenische Alterthumskunde aus dem Gesichtspunkte des Staates.* 2 vols., Halle, 1826-30.
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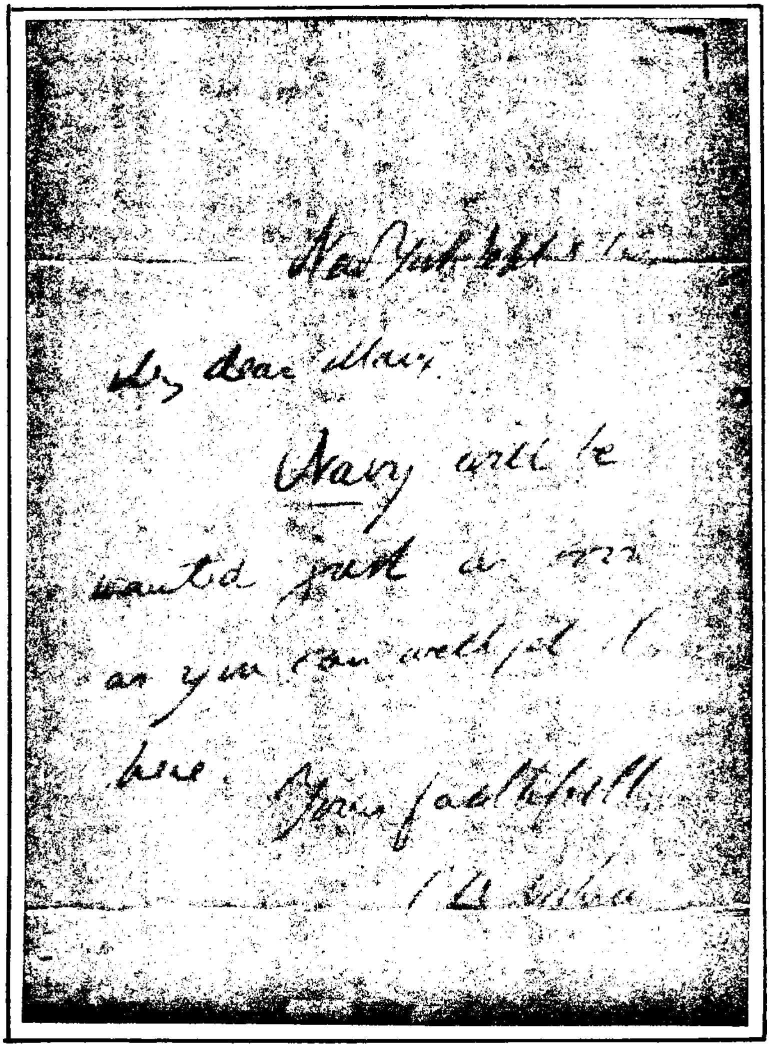

New York [illegible]

My dear Marx,

Navy will be wanted just as soon as you can well get it here.

Yours faithfully
C. A. Dana

Letter by Charles A. Dana to Marx, Sept. 8, 1860, asking him to send the article "Navy."

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ADDENDA

The following additional information turned up after the pages of the Introduction had been made ready for the press. The page to which this information is relevant is given first in each case.

To page 19:

Re the statement in Yelena Stepanova's *Frederick Engels* about the "eighty articles on military topics":

The source of Stepanova's statement is clearly the introduction to the first edition of the Russian *Sochineniia*, vol. 11, part 2, which included the *NAC* articles. The editors of the first edition stated: "In the course of 1857-1861, Marx and Engels wrote about 80 military articles for the Cyclopaedia..." However, at the same time, this edition included only 28 *NAC* articles, and nowhere does the introduction explain the discrepancy between the 28 and the "80."

To page 25:

Re the footnote on Marx's mistaken reference to "Major Ripley":

The Ripley whom Marx confused with the *NAC* co-editor was Major Roswell Sabine Ripley (1823-1887), author of *The War with Mexico* (New York, 1849) and other works. He had acquired this rank in the Mexican War, and eventually became a brigadier general in the Confederate army. Both Engels and Marx had read the book on the Mexican War in 1854. In addition, in the August 1855 issue of *Putnam's Monthly Magazine* which carried the first article in Engels' series "The Armies of Europe," the editor had interpolated a footnote of his own at a point where Engels took a slap at nationalistically biased war histories. The interpolated footnote cited Ripley's book as an example "of the first class for impartiality" and "even-handed justice to friend and foe"--a claim that would astonish any Mexican reading its first chapter.

To page 34:

Re the article "Bennigsen":

The first Russian edition of the *Sochineniia* retained Marx's spelling, Benningsen, with the extra *n*. It is only in the second edition that the spelling was silently corrected.

To page 41:

In the Introduction, we cite the attack on Marx's article "Bolivar" by the editors of the second edition of the Russian *Sochineniia*. However, the editors of the first edition, in their introduction dated 5 June 1933, had had only complimentary words for this same article: "This article is a remarkable work of its kind. While staying within the tone of the Cyclopaedia, the author did in fact write a very biting and subtle satire on Bolivar y Ponte..."

For a detailed discussion of Marx's views on Bolivar in the context of Latin American historiography, see Hal Draper, "Karl Marx and Simon Bolivar: A Note on Authoritarian Leadership in a National-Liberation Movement," in *New Politics*, Vol. 7, no. 1 (Winter 1968).

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